COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper – Second-class postage paid at Boston, Mass.

Vol. 2 No. 24 | June 12, 1968 | Price: $9/year

Laser Memory System

The laser may be the answer to storing and retrieving huge amounts of information in computer systems of the future. Here Dr. Di Chen, a solid-state physicist for Honeywell Inc. in Minneapolis, adjusts a mount holding manganese/bismuth memory film through which laser is projected into analyzer, right. A laser system can store 30 times as much data as the latest disk files and retrieve information up to 100 times faster than now possible. It reads data deposits as small as 1/10,000 of an inch.

Judge Rules That WU Breached Its Contract

NEW YORK – A New York State judge has ruled that Western Union breached a contract with Law Research Services, Inc., the first customer seeking to offer a computer service over Western Union's teleprinter network.

Judge Irving J. Levey deferred a ruling on the matter of assessing damages. Law Research, which has been attempting to provide a legal research service for lawyers using computers connected on a real-time, on-line basis with law offices, has claimed it has suffered a $37 million loss.

The judge found that Western Union had delayed putting data into the computers' memory devices, delayed in supplying billing tapes, and had "drastically" raised the prices it would charge Law Research for its services.

The judge, in noting that Law Research has been "financially unsuccessful," did find that both parties "were somewhat at fault" and that the reasons for failure did not lie exclusively with Western Union.

Paul Weiner, secretary-treasurer of Law Research, hailed the decision, however, as upholding the most vital part of the suit, the charge that Western Union breached the contract. He asserted that the Law Research case could well become a landmark case in the growing computer communications field.

Delays Hurt Service

Justice Levey, who has been referred to in New York legal circles as "one of our better judges," found that the volume of customers, which had fallen far below the level which Law Research had agreed to generate, was a result of delays in loading the computer.

These delays involved both the inclusion of citations which Law Research had prepared for the states which were apparently in operation, and also for the states which were not put into operation.

The result of such delays would have been to harm the quality of the service, where it was in operation, as well as to prevent it being spread to areas where it was not currently in operation. In fact, although the service was expected to be placed on-line in 37 states it was actually implemented for only seven by Western Union.

A further complaint by Law Research – the lack of billing tapes – caused the judge to note that this kept the defendant in the dark about what the billing situation was, as he had no way of knowing what inquiries were being made by his clients to the service.

Rates Not Filed

The tariffs charged by Western Union, which are a major point in this case, do not always have to be filed with the federal government, although Western Union is a common carrier and as such is under the control of the Federal Communications Commission. The FCC insists on standard tariffs being filed, but allows the corporation to engage in other developmental and outside activities without filing the charges or getting them approved.

In general, most of the common carriers are not filing tariffs for data processing and like services. It is believed that they feel that these activities are so competitive that they have to retain the ability to change their charges, and that filing them would tend to make them inflexible.

Ampex Mass Memory Serving Two Computers

OAKLAND, Calif. – An Ampex plug-for-plug 360-compatible memory is being evaluated at the Kaiser Hospital here. The memory, currently on loan, is a two million byte, 1.5 microsec. extended core and is being divided between two 360/50s which are used by the hospital. It replaces, at least temporarily, a one million byte IBM extended core memory which is already installed.

A spokesman at the hospital told COMPUTERWORLD that they were more interested in the ability to split the memory between the two systems than in the faster access which the Ampex system has. "We use one of our 360s in a real-time mode and the other for batch work and for back up," he said. "The one million byte IBM memory cannot be split between the systems, but the Ampex can."

The installation of the unit marks the first use of the plug-for-plug Ampex memory. It currently is installed only for an evaluation period of 30 days.

DPMA Conference Set For June 25-28 in D.C.

WASHINGTON, D.C. – J. Stanford Smith, vice president and general manager of GE's Information Systems Group, will keynote the Data Processing Management Association's conference here June 25-28 with an address on the "Growing Maturity of the Computer Age."

Some 30,000 persons are expected to attend the DPMA conference at the Washington Hilton Hotel and more than 100 companies will be exhibiting their products and services.

Eagle Scout Steven P. Wedell, 14, of Van Nuys, Calif., will be presented with a computer merit badge during the general assembly in recognition of the new Boy Scouts computer training program.

Theodore Rich, DPMA international president, will discuss "The Data Processor's Responsibility to Society" at the Conference Farewell Luncheon June 28. Rich is controller of the Lincoln Income Life Insurance Co.

The seminar program will be divided into 10 separate series of sessions, each covering a different area in three seminars.

The registration fee for DPMA members is $75, for nonmembers, $85. Registrations should be sent to M.L. Martin, DPMA Registration Chairman, Data Processing Center, Catholic University of America, Washington, D.C. 20017.

On the Inside

Western Union Approves Merger With CSC, *Page 12*

Ampex Introduces Premium Computer Tape, *Page 2*

Applications 8-9
Calendar 7
Careers 14
Contracts 6
Editorials 4
EDPeople 6
Education 7
Expansions 6
Financial 12-13
New Products 16
Orders and Installations 6
[illegible]ces 2
So[illegible]ies 10
[illegible]are 11

Galler Wins ACM Election

NEW YORK – Dr. Bernard Galler of the University of Michigan has won the ACM presidency over publisher Richard Canning in a postal election which concluded at the end of May. His two year term has already started. He succeeded the retiring president, Dr. Anthony G. Oettinger of Harvard University, June 1.

Other election results announced were: the vice presidency was won by Walter Carlson of IBM, over George Glaser of McKinsey & Co., and Donn Parker of Control Data was re-elected secretary over Jean Sammet, retiring Northeast Region representative.

Galler, ACM's vice president for the past two years, called in his platform for special attention to the dissemination of information, particularly to reducing its volume and ensuring its relevance. It is expected that he will support measures to make the *Journal of the ACM* – and perhaps other publications – options rather than automatic adjuncts of membership. He also called for consideration of the evidence of misrepresentation by some programmer training schools, and in general for the members of the ACM to become a competent group of professionals, aware of the problems introduced by their technology and actively involved in the issues themselves.

Walter Carlson, the new vice president, listed the organization, coordination, and inspiration of needed new activities as the area where he felt he could best serve the organization, but he did not advocate any specific policies.

In the elections for members at large of the ACM Council, the three seats were won by Dr. Bruce Gilchrist, IBM; Dr. Herbert R.J. Grosch, National Bureau of Stan-

(continued on page 10)

EDP Stocks Climb 7% in Week

CW's Computer Stock Index posted its largest gain in a month, moving up 7.08% to 143. The Dow Jones industrial average, on the other hand, gained only 0.45% during the week, standing at 899 on Friday's close. The movement upward may have been assisted by President Johnson's announcement that he would accept a $6 billion cut in federal spending in order to get a 10% income tax surcharge

(continued on page 13)

Ampex Offers Premium Quality Tape

Ampex 870 Series tape

REDWOOD CITY, Calif. – The Ampex Corp. has followed 3M in offering a new computer tape, this one called "B70," which emphasizes the length of time it can be used before failures occur but otherwise is using a quite different approach to the market.

Where 3M's 777GP tape is being sold at a discount (owing to the elimination of the expensive certification process) Ampex is charging a "slight premium" for its tape. Where the 3M tape is in addition to an already available tape – the 777 – the Ampex tape replaces the current 830 tape.

The new IBM compatible tape features an improved binder formula which results in longer tape life and reduced headwear than 830 Series tape. It will be introduced June 22 at the DPMA convention in Washington, D.C.

"Coupled with exclusive 'Ferosheen' surface finishing process, 870 Series tape provides an exceptionally smooth surface and longer use before tape failures than any other tape on the market," L.R. Sainsbury, vice president of Ampex, said.

Paul Weber, marketing director for the Ampex Magnetic Tape Division, told COMPUTERWORLD that the claim that 870 did outperform other tapes specifically included 3M's 777GP tape.

No immediate details of the actual performance which users can expect was available. "We will bring all the data – the measurements, the tests, and everything – down to Washington where we will show them at the DPMA conference later this month," he said.

The tape will be sold at a premium because it is "a special product," according to the company. The major problem which the company considered was the need to minimize head wear. "We believe that this is the fatal error that a number of our competitors miss," was Weber's comment. "We can't, of course, because of our work in the video and other fields were we supply the heads and the tapes. We think that we must give our users a product which will enable them to use their own equipment properly. That is why we don't just polish the tape surface – and so expose the abrasive bits of oxide which have been broken off – but instead use a heat treatment that prevents the abrasive area coming to the surface."

The polyester base tape, which meets all of the newest IBM specifications, is available in the following configurations, as well as configurations for other IBM compatible systems: 871 tape records 556 characters per inch (cpi) on a seven track format, 872 records 800cpi on seven track, 873 records 800cpi on complete area tested tape (Catt), and 874 records 1600cpi 3200 flux changes per inch on Catt.

The clean room environment, new production line, and new processing equipment at Ampex's Opelika, Ala., tape manufacturing facility insure a clean tape surface.

Ampex guarantees 870 Series tape to be 100% free from original permanent errors.

RCA Sets Sights on Small Computer User, Cuts Lease Prices

CHERRY HILL, N.J. – RCA is changing the thrust of its marketing effort and is going to shoot for the small user as well as for the medium/large, rather complex systems users who have recently been their major market, COMPUTERWORLD was told by Edwin S. McCollister, vice president-marketing, this week. The changes hinge on the Spectra 70/35, whose rental (but not purchase) prices will be reduced as of Oct. 1 so as to compete head on with the IBM 360/25.

"We are arranging our prices so that the central processor 70/35 in almost any mix of instructions or jobs will give twice the horsepower of the Model 25, and for the same amount of dough," McCollister said.

At the same time other measures are being taken to strengthen the product line. A new Disk Operating System, which involves no tape units, is being added to the Tape/Disk Operating System currently in operation. The new software was developed by Siemans in West Germany, and is now being added to the standard RCA product line.

It includes Cobol and Fortran compilers. Schedule release date for the new Disk Operating System is Sept. 30.

New tape units, the 7451 at 60KB and the 7453 at 120KB, the first 1600bpi units marketed by RCA, are also being made available. These are priced in line with the IBM 2400 Models 4 and 5 units with which they correspond.

The price changes involve the reduction of the lease fee for the 32K Spectra 70/35 processor by $530 a month, from $3090 to $2560, and of the 65K version by $335 a month, from $4325 to $3990. A new 49K version of the 70/35 is being introduced for the first time.

Aerojet-General to Handle Data Processing for Credit Unions

SACRAMENTO, Calif. – Aerojet-General Corp. has entered into an agreement with Centralized Automated Processing Services Inc. (CAPS) of Baltimore, Md., to perform data processing services for credit unions. CAPS is devoted solely to providing accounting and management information systems to credit unions throughout the nation.

Services

Aerojet, a General Tire & Rubber Co. subsidiary, gained its computer capability during the development of technologies involved in space and defense programs.

CAPS now serves 95 credit unions with more than 300,000 members. With more than two million credit union members, California represents one of the largest areas for potential service. CAPS is owned in equal shares by the Maryland, New Jersey, Georgia, and District of Columbia Credit Union Leagues.

Real Estate Listings

SAN DIEGO, Calif. – A computerized real estate listing service designed to put sellers in touch with potential buyers will be installed here by University Computer Systems, Inc.

USC will serve members of area real estate boards in matching prospects with available property. The service, to be in operation with an NCR Century 100 computer by mid-1969, will be designed to save salesmen countless hours of manual checking through various listings.

Subscribers will receive a weekly printout listing facts, figures, and changes on real estate listings. They can also use a search and automatic response service, which can match the prospective buyer with all possible property for sale in his range and also can be used in real estate exchanges.

University Computer Systems, Inc., is the first venture into the computer field by a 42-year-old firm called University Mechanical and Engineering Contractors. The company is one of the largest heating, air-conditioning, and plumbing companies in the West.

Time Sharing

WABASH, Ind. – Wabash Magnetics, Inc. has announced formation of a wholly owned subsidiary to provide computer time sharing services.

The Computer Revolution Is Increasing Its Impact On You . . .

. . . And Here's What YOU Can Do About It

COMPUTERWORLD
The Newsweekly for the Computer Community

Yes, please send me COMPUTERWORLD for . . . . .

☐ 1 Year $9.00 ☐ Bill Company
☐ 2 Years $16.00 ☐ Bill Me
☐ 3 Years $20.00 ☐ Payment Enclosed

Name _____
Address _____
City State Zip Code
Company Name _____
Your Title _____
Company Product or Service _____

Return to:
COMPUTERWORLD, 60 Austin Street, Newton, Mass. 02160

COMPUTERWORLD provides you a weekly news briefing on the key developments in computer application techniques . . . software . . . industry developments . . . job trends . . . equipment design . . . personnel changes . . . new installations . . . stock prices, etc. The reporters and editors distill this information each week from hundreds of press conferences, news releases, seminars, conferences, user surveys, speeches, exhibitions, exclusive interviews, etc. . . . boiling it down to compact and unbiased news reports . . . to save you time and yet let you be "among the first to know" about key developments in the computer field.

Fill in coupon on left . . . NOW!

FOR SALE
IBM 1316 Disc Packs
For 1440—360
Almost New

Alden Corrugated Container Corp.

1 Church St.
New Bedford, Mass. 02740
Phone (617) WY 3-9971

Sleight of Hand

The touch of a finger to one of 20 translucent strips on the face of this CRT terminal signals the computer to call up information related to the listed topic. Called the Digiscribe, this Control Data Corp. terminal is being used by Biomedical Associates, Inc. at the Research Center of St. Joseph's Hospital, St. Paul, Minn.

Honeywell Now Offering Disk Conversion System

WELLESLEY HILLS, Mass. – Honeywell has started a new liberation campaign in an attempt to add disk oriented systems to the Honeywell market.

In the original liberation campaign started in 1963, the firm offered automatic conversion of card and tape 1401 programs to Honeywell Model 200s and reckons that it has helped them replace $100 million worth of 1400 systems in the last three years.

The new conversion campaign is aimed at systems with disk units, particularly 1440s, and 360/20 and 30s. The two major restrictions on the campaign are that the user of the IBM equipment should either be using RPG exclusively (in which case the Honeywell RPG to Cobol translater is used) or be using SPS or Autocoder 1400 coding which can be automatically converted to Honeywell coding.

The company estimates there are up to 3000 competitive systems which can be converted with the Disk Liberator system to a faster Honeywell computer at only a slight increase in monthly cost.

"Disk Liberator provides an operating system that gives the user a 100-300% faster program execution time, a central processor cycle time that is three to five times faster, larger core memory, better performance with peripheral units, simultaneous reading and writing operations, and increased disk storage capacity," according to Harry E. DeSmet, peripheral group product manager.

Disk Liberator, he said, requires less than one per cent "hand tailoring" to convert a normal program library from the 1400 to Series 200 systems.

During the conversion process, information stored on disk packs on competitive equipment is first converted either to magnetic tape or punched cards, and then run through a Series 200 computer. The data then is loaded onto Honeywell disk packs with no reformatting of data required, DeSmet said.

A typical Honeywell Model 120 replacement system rents for about $4,235 per month. This system includes 16,384 characters of core memory, two 258 disk pack drives, each capable of storing 4.6 million characters, a card reader/punch, and a line printer. A comparable Honeywell Model 125 system, with a fourth read/write channel and faster memory cycle time, rents for about $4400 per month, he said.

Court Told to Reopen Antitrust Case

WASHINGTON, D.C. – The U.S. Supreme Court has ruled in favor of the government in an antitrust case which had some parallels with the situation in the data processing industry. The court said, in effect, that the test of whether or not an antitrust settlement was complete was whether it had achieved its purpose – rather than whether or not the conditions of the order were obeyed.

Back in 1953, United Shoe Machinery of Boston had been stopped by a Federal District Court from refusing to sell its equipment, which was previously leased; stopped from making it substantially more advantageous for its customers to lease rather than buy, and stopped from refusing customers' requests to lease or buy "except for good cause."

The current case concerned whether the government could ask for the court's 1953 decree to be modified so as to break up the company into three separate portions as it believed that the company was still monopolizing the industry. The Federal District Court in Boston had refused the government permission to do so, because of an earlier Supreme Court case, involving Swift & Co., where the meat packers in 1930 were refused permission to modify a Sherman Act decree.

The Supreme Court on May 20 reversed the Federal District Court and said that the Swift case did not bar the United Shoe Machinery decree from being modified at the request of the government.

Disk Pack Warranty Details Released

SAN JOSE, Calif. – The new three year disk pack warranty offered by Caelus Memories covers manufacturing and material defects, it was revealed when printed copies of the warranty were released last week. A user is asked to return any disk pack which he feels is unsatisfactory, and if, upon examination, it turns out to have such a defect, no charge will be assessed.

The new warranty, believed to be the first three year warranty in the industry, is currently being offered by Caelus and by certain private brand names which are being manufactured by Caelus.

Computer Takes 'Blame' For 'Illegal' Transactions

BEAUMONT, Texas – The appearance of unauthorized transactions on the customers' accounts of a major securities firm was blamed on "computer errors" – and this excuse apparently was accepted for a considerable time, according to a grand jury indictment returned here last week. Thirty counts of fraud, mail interception, and conspiracy are said to involve over a half-million dollars.

The indictment alleges that beginning in January 1965, the defendants conspired to defraud E.F. Hutton & Co., a New York securities firm, and its customers by misappropriating customer funds, securities, and commodities for their own use. It charges that when some of the fraudulent transactions appeared on customer account statements the customers were told that the transactions were mistakes caused by the company's computer.

The defendants, who left Hutton last August, pleaded innocent.

Author Royalty System Planned

Special to COMPUTERWORLD

LOS ANGELES – A new time sharing service here, expected to open for business next month, will offer royalties to clients for the use of their programs.

Under the plan, users of Remote Computing Corp. services can enter certain of their applications packages into the firm's program library. The system will keep a record of use of the package by other users and the authors can negotiate royalty arrangements.

Under Contract to Burroughs

The new company, which already is under contract to Burroughs Corp. to develop and maintain B5500 time sharing software, will offer time sharing in both conversational and remote batch modes. It will also provide consulting services.

RCC is headed by Joe Hootman, a former Burroughs marketing executive. Dr. David Dahm, a former Burroughs real-time and time sharing specialist, is technical director.

COMPUTER TIME
AVAILABLE
360/40
CPU: 128K
COMPATIBILITY
FLOATING POINT
DECIMAL ARITHMETIC
STORAGE PROTECTION
3-2401s (1600 bpi only)
1-2314
1-2540
1-1403 NI
CALL
(212)-686-6110 ×502
During June, 5 2311s plus 2 more 2401s are available.

Computer Creates Hurricane Season

EL PASO, Texas – Long before Tropical Storm Abby, the first of this year's potential hurricanes, began kicking up her heels in the Caribbean, a hurricane was slashing along the Rio Grande River here. But this one was inside a computer.

Hurricane Beulah is being rerun daily by the International Boundary and Water Commission to study improved flood control measures for the river.

Soon after Beulah subsided last year, the commission, charged by treaty with resolving border engineering questions involving the United States and Mexico, began collecting the mass of information about the storm, its damage, and effects on the Rio Grande.

The information, supplied by the U.S. Weather Bureau and 19 river and floodway stations between Rio Grande City and Brownsville, has been translated into a mathematical model of the river by an IBM 1130 computer. It is being used daily to study and analyze the changing effects of the worst storm in southern Texas history on the Rio Grande.

"The aim of our studies," said J.F. Friedkin, commissioner of the agency, "is to determine what additional measures must be added to the Rio Grande control system to provide flood protection from future storms."

Friedkin said the commission is magnifying and diminishing Beulah's effects to determine criteria for improvement of the flood control system. The computer is also used to analyze how the storm's length and intensity contributed to flood conditions.

Controls Water Use

Storm control forecasting for the Rio Grande's downstream points is the commission's latest use of the 1130, which was installed early last year to monitor and improve the records of flow and usage of the Rio Grande.

The commission allots a certain share of the river's water to the United States and Mexico in accordance with the 1944 Water Treaty. The computer keeps close track of each country's ownership of water in the river and in storage.

Conditions on the river, including rates of flow and diversions of water by the two countries, are recorded by measuring devices located at 110 different points. Data from 17 of the instruments is monitored every 15 minutes and punched into tapes, which are sent to the El Paso office and processed by the computer.

The resulting report is sent back to the nearest field office for review, and then becomes a part of the basis for the division of the national ownership of water by the two countries. The other flow-measuring devices produce graphs, which are analyzed manually. Eventually, data from 55 of the instruments will be sent to the computer.

"Knowing how much water is available for use is particularly important during drought conditions," Friedkin said. "The computer keeps us abreast of river conditions and permits us to more effectively utilize the area's most important resource."

In addition to simulation studies of the Hurricane Beulah flood, the computer is being used to determine the potential effect of man-made projects on the river. When a bridge is proposed, for example, simulation studies are conducted on the river with and without the structure. Since the effects of the proposed bridge on the river are simulated as a mathematical model within the computer, drastic mistakes may be eliminated before construction is ever begun.

Editorials

A Late Welcome

IBM's action in ending the unsupported status of customers of the leasing companies is to be welcomed. The exact effect of IBM's previous position was never clear, mainly because the rush to third part leasing has only just started and few second users currently exist. Looking forward, it could be seen that when the population of second users expands, the old policy would have caused some uncertainty, arguments, and, quite likely, an inefficient use of computers involved.

There is an interesting point here. If a manufacturer's computers are poorly used, the manufacturer will inevitably share the blame in management's eyes, regardless of who is providing the direct support for the system. "Love 'em and leave 'em" is not a rewarding strategy for a computer maker with long term prospects in the computer business.

We welcome this policy decision. It benefits both sides.

Purchasing Practices

Once again a congressional committee has cited the federal government for using purchasing practices which tend to restrict competition. In the present case, the Subcommittee on Economy in Government has singled out the purchases of computers as being handled in such a manner as to favor the large manufacturers. The subcommittee has called for changes in the procurement process to avoid the smaller manufacturers being frozen out, to the taxpayer's disadvantage.

The subcommittee's report, following as it does, hard on the heels of Gen. Gordon T. Gould's speech (CW June 5) reporting that apparently only four manufacturers in the country are known to be able to respond to the forthcoming worldwide command and control system procurement bids, suggests that once again the oft-derided politicians may well be more in tune with the needs and possibilities of our technical age than is the Defense Department.

And that's dangerous!

COMPUTERWORLD

The Newsweekly for the Computer Community

TM Reg. U.S. Pat. Off.

Weekly Newspaper - Second Class Postage Paid at Boston, Mass. Published every Wednesday by COMPUTERWORLD, Inc., 60 Austin St., Newton, Mass. 02160. Telephone: (617) 332-5606 & TWX: 710-320-6635. Copyright 1968 by COMPUTERWORLD, Inc.

Alan Taylor, Editor in Chief. *W. Walter Boyd,* Managing Editor. *Robert M. Patterson,* News Editor. *Neal Wilder,* National Sales Manager. *Henry Fling,* Production Director. *M. Phelan,* Circulation Manager. *Frederick Anderson Jr.,* Financial Editor. *Joseph Hanlon, Kate Rachstein, Evelyn Cowell, Elly Tennenholtz:* Associate Editors. *R. Zeigel,* Position Announcement Manager. *Patrick J. McGovern,* Publisher.

Subscription rates are: $9 for one year, $16 for two years. Add $1 per year for Canada; $3 per year for Foreign. Please send all editorial and subscription material to: COMPUTERWORLD, 60 Austin St., Newton, Mass. 02160. (617) 332-5606.

Advertising Sales Offices:

Midwest:
Edward Sherinian
Grant Webb & Company
333 N. Michigan Ave.
Chicago, Ill. 60601
(312) 236-5817

San Francisco Area:
Bill Healey
Jules E. Thompson Co.
1111 Hearst Bldg.
San Francisco, Calif. 94103
(415) 362-8547

Los Angeles Area:
Bob Byrne
Sherwood/Byrne Assoc.
1017 N. La Cienega Blvd.
Los Angeles, Calif. 90069
(213) 657-6221

Elsewhere:
Neal Wilder
Robert Ziegel
COMPUTERWORLD
60 Austin St.
Newton, Mass. 02160
(617) 332-5606

Reproduction of material appearing in COMPUTERWORLD is strictly forbidden without written permission. Send all requests for permission to the Editor.

Nothing Is Obsolete If It Works, Is Sam Wyly's Guiding Philosophy

"When I was a boy my father bought a paper. He bought an obsolete press, but one which he could afford, and it printed the paper for us for ten years. We didn't know it was obsolete. It wasn't obsolete for us. It was only obsolete for a fellow with a big operation who had to have the latest press. But it got the paper out for us.

"So, what does 'obsolete' mean?"

The speaker was Sam Wyly, president of University Computer Co., talking to COMPUTERWORLD during a recent visit we made to his Dallas, Texas, office. The Western Union situation was at its height, but Wyly was not talking about that. There was a picture on his wall, however, which seemed quite unusually apropos (see photo).

Wyly was talking about his interests and the areas in which he was moving. His intentions, he said, were clear. His company was going to provide such a good service for people that they would be unable to afford not to use UCC's operations. And UCC was going to create, in-house, the operation which would support this objective.

These in-house operations he called "second-order peripherals." "A second-order peripheral," he explained, "is one which the computer manufacturers do not covet. They covet the direct peripherals – the printers and card readers, the tape units and punches – but not the plotters, and microfilm readers. We do. We emphasize them. We have our own line of microfilm products which competes with Stromberg Datagraphics, our own line of plotters which competes with CalComp, and our own line of digitizing devices. We think that they are important."

Just how important the company believed independence to be became obvious later. The quest for independence was regarded everywhere as the quest for efficiency.

UCC felt that it needed an "intelligent" terminal, one which could batch the work more economically than the terminals which were then on the market. There was nothing like it available, said Gene Scott, who is in charge of the Technical Services Division of the Computer Utility

(Continued on Page 5)

UCC President Sam Wyly stands at his desk in Dallas. The painting of the Indian, which hangs in his office, serves as a silent reminder of UCC's recent skirmish with Western Union.

Letters to the Editor

PL/1 Defended

To the Editor:

Your editorial of May 15, 1968, "Why Cobol Will Fail," is very interesting and, I hope, a prophesy of things to come. Unfortunately, your reasons for the future failure are wrong. It will fail, not from a lack of readable English (Cobol?) arguments, but because PL/1 is better.

Before you knock PL/1, live with it for six months, then go write a Cobol program. You too will hope for an early demise of Cobol.

Jan Mel Poller, President
International Computing Service
Miami, Fla.

Plea From a Salesman

To the Editor:

Your paper has provided a public service with its coverage of the problems which beset a user of data processing equipment – both in planning and in ensuring that the equipment lives up to its promise after the user gets it. You have looked at the implications of the sales compensation plans in the industry, and of the effect of the actions of the hardware companies' representatives on the legal situation.

This is excellent, and justified. A user should know these things as they affect him.

But I feel that you have neglected another part of the computer community, to which I belong. I feel that you have not explored the position of the salesman when things go wrong.

What should happen, for instance, when a salesman gets an order, and the promised software is not delivered?

At present he simply loses out.

Do you think that this should happen?

This is just one instance. There are others.

I think that it would be nice for you to remember this part of the computer community in your coverage.

Name Withheld
By Request

Navy Cobol Test

To the Editor:

I refer to a letter to the editor in your edition of April 24, 1968 headed "Navy Cobol Applauded." At the end of it there is an editor's comment implying that the U.S. Navy's USASI Cobol test deck is available to the public. Would you be so kind as to forward me information on how this deck may be obtained.

Thank you for your assistance.

R.J. Morrell
Systems & Standards Coordinator
Domtar Ltd., Montreal

The address is G. N. Baird, Manager, Testing and Evaluation, Navy Programming Languages Standards Group, Room 5D840, The Pentagon, Washington, D.C. 20350. Ed.

Type of Operation Determines Choice of Inscriber

This is the third in a series of articles on the new keyboard to tape units.

The problems with keypunching are:

- The use of cards, which cost money and can be used only once.
- The restricted size of the records, 80 columns.
- The creation of the input document.
- The verification of the card.
- The restricted form of any humanly readable output.

All these points are dealt with by one or more of the possible replacement units which COMPUTERWORLD has examined.

Let us start by drawing attention to some particular virtues of the available devices which may have caused you to single out one particular unit.

Do your applications have complicated program cards? The IBM Model 50, unlike any of the other units, has program cards which allow *up to eight* levels of coding.

Do you want to be able to verify your data by looking at the input? The Communitype, IBM MT/ST, and Tally systems normally use this type of verification and *can save 50% of the input labor.*

Does your input go straight to the computer? The Mohawk, Honeywell, and Sangamo units directly produce computer tape – *without a second operation* (as needed by both Tally and Communitype) or having to buy special peripherals (as needed by the IBM system).

There are negative aspects, of course. *If you don't want to be tied to the IBM 360s, avoid the IBM Model 50.* No other computer can use its output and you may become locked into the 360.

If you have many verification problems, *avoid the Communitype* which does not have the re-keying comparison facility – *and the IBM Model 50* which does not normally show the original keyed character.

These few points will not be enough to bring about the decision points. So, let us look at a number of important characteristics.

Preparation of Copy

Traditionally, copy is prepared especially for the keypunch operation. This is done primarily by writing on special forms used only for this purpose. It is necessary because of the need to economize in columns used and to use exactly the same columns each time. This is necessary so that the tabulators and sorters can work.

In the past there was no alternative. Now there is.

A computer, properly programmed, does not need this strict form of input. It has little value, and there is no need to restrict the size of the input record to 80 columns. Variable length fields with space, commas, or some other divider can be used. It may even be possible to avoid having to prepare the copy for the keying operation.

However, if you are to avoid this step, the input unit you use must be appropriately designed. It should have a long record possibility – at least 200 characters. (You may decide you want to add material to the input line. A card which normally had just a part number will probably have at least the first word of the description, and the computer can check the part number to see if it is correct. The typewriter styled units have the facility and so has the Model 50. The other available units have this characteristic only in a restricted manner, going up to 160 characters maximum.

The Actual Keying

There are two types of keyboards available – typewriter style and keypunch style. Adherents of both of these types of keyboard describe them as being "familiar." Let us examine two distinguishing points about them:

(1) The typewriter is designed for *highly alphabetic input,* while the keypunch is designed *mainly for numeric input.*

(2) There is no reason to expect the keypunch style to remain familiar to many people *now that the basic reason for its existence is vanishing.*

At present there is no good dual-purpose (numeric or alpha) keyboard. You must decide to buy two units or select one type for your work. Naturally the type you select will be the one most suited to your operations.

It is always helpful to have some way of knowing just where you are on the record, to see what is presently there. This is not absolutely necessary, but most people like to see for themselves.

All the units provide this facility one way or another. Their methods differ. Some ask you to interpret hexadecimal code. Some light up the character concerned. Most of them allow you to see only a single character. Those that produce hard copy (the IBM MT/ST and the Communitype in particular) effectively show you the whole document.

There you have the problems and opportunities involved in keying the data. Next week we shall look at the final areas, verification and use of the data, and the equipment you must have. The conclusion of this series will be a roundup of the distinctive features of all the contenders, their prices, and delivery schedules.

Review Check List

Major Characteristics of Internal Operations Which Should Be Studied Before Choosing a Specific Keypunch Replacement.

Data Characteristics

Is input document created specially?

Can input be checked by scanning?

Is input highly numeric?

Is input difficult to read?

Program Cards

Are program cards used much?

Are 2-program cards used much?

Are program cards complicated?

Verification

Are verification errors frequent?

Is verifier often wrong?

Computer

Do you want to use other than IBM 360s?

Communications

Do you want to transmit data?

Do you want to return reports to input station?

Data Inscribers

Manufacturer	Unit Name	Keyboard Style	Computer Tape?
Communitype	Communitype	Typewriter	No
Honeywell	Keytape	Keypunch	Yes
IBM	Model 50 Inscriber	Keypunch	No**
IBM	Magnetic Tape/ Selectric Typewriter	Typewriter	No**
Mohawk***	1101 Data Recorder	Keypunch	Yes
Sangamo	Data Station	Keypunch	Yes
Tally	1021 Data Terminal	Typewriter	No**
	4021 Data Terminal	Optional	Yes

** Communication facilities are included in the price*
***Can be read into IBM 360s via special reader.*
****Mohawk also makes the NCR 735 Data Recorder.*

Ways Various Units Permit Verification Of Input During Inscribing Operation

What an operator normally sees on each of the units when checking for a potential keying error.

Communitype	Hard copy
Honeywell KeyTape	One alphanumeric character illuminated
IBM Model 50	Cross-reference to new character shown on console (See Figure)
IBM MT/ST	Hard copy
Mohawk 1101	Hexadecimal indication of single character shown on console.
Sangamo Data Station	Alphabetic character directly illuminated, showing character presently on tape.
Tally Data Terminal	Hard copy

UCC's Goal: Provide Better Service

(Continued from Page 4)

Group. "So we built it (the Cope .45). When we had finished there was still nothing like it available, so we put it on the market. But we built it originally for our own use."

There were no figures from users of the Cope .45 remote terminals available, partly because of the delays in installing the delivered systems due to the telephone strike. But the figures from UCC's own data center have jumped from 100 shots per shift to nearly 700. The improvement he ascribed to reducing the blow-ups and the reruns, as well as to reducing the overhead.

One of the things everyone at UCC was proud of was the type of clients which the company had attracted. "Companies like North American Rockwell and Standard Oil – who have millions of dollars worth of computers – come to us," was Wyly's comment. "They have thousands of technical personnel – and they are the ones who find the greatest need for our services. We can often handle their work more economically, and faster than they can do it on their own in-house systems. That's the secret of the matter. And that's why we are not worried by obsolescence.

COMPUTERWORLD Editor Alan Taylor confers with Gene Scott, center, UCC vice president for technical services, and Bill Grubbs, right, president of UCC's Computer Utilities Group.

"We are not going to accept the type of problem which came with the third generation of computers, with all of its compatibility problems. We are going to stay free of that. And we are capable of doing so. We will give the best possible service to our clients – and that won't go obsolete."

It sounded like a declaration of faith in the concept of the computer utility and the service organization from a four-year-old company that had come far and intended to go farther.

Wyly put it this way in his annual message to the stockholders: "By 1975 we expect that over half the values of a multi-billion dollar computer industry will be rendered in the service mode. We intend that UCC shall have a leading position in the market."

TLW Computerworld Corner

Item 1: NCR 315 Banking System: 10K SLAB, 2 CRAMS on line MICR sorter reader, 680 LPM printer with buffer.
Available August 15, 1968

Item 2: 1401-E4, 1402-1, 1403-2, 1406-1 and 5-7330's. The system is loaded presently in a bank. Excellent environment. Extra features include: M/D, serial I/O, Disk adapter, process overlap.
Available July 1

Item 3: 1401-C3, CPU, all features.
Available immediately.

Item 4: 729V Tape drives (3 of them)
Available immediately

Item 5: 1406-1, additional storage
Available immediately

Item 6: We need 2 1406-2's
Immediately

List Your Computers with TLW.

TLW Corp.
Box 29763
Atlanta, Ga.
30329
404-633-2579

EDPeople

IS NOW	AT	WAS	AT
Edwin Klein	Manager Product Development	Decade Computer Corp. Huntington Beach, Calif.	Chief, Computer Development	Nortronics Div. Northrop Corp.
Wayne A. Saunders	Manager Education Research	Honeywell EDP Div. Wellesley Hills, Mass.	Supervisor Education Research	Honeywell EDP Div. Wellesley Hills, Mass.
A. Kenneth Swanson	Area Director	Computer Learning Corp. Washington, D.C.	Colonel	U.S. Air Force
Harold Y. Greenberg	Director Data Communications	World Headquarters Staff Univac, Philadelphia, Pa.	Product Manager Communications	Univac Philadelphia, Pa.
R. Gordon Brunner	Director Market Research	Jonker Corp. Gaithersburg, Md.	Project Director	Science Communication, Inc.
Robert B. McDowell	Director Computer Engineering Group	Johns Hopkins University Silver Spring, Md.	Director, Telemetry Processing Facility	Johns Hopkins University Silver Spring, Md.
Gerald J. Sullivan	National Sales Manager	Ampex Corp. Redwood City, Calif.	Design Engineer	Philco Corp.
Theodore C. Papes, Jr.	Assistant General Manager, Operations	Data Processing Group IBM	Director, Finance	Data Processing Group IBM
Joseph L. Bumbery	Director, Systems and Data Processing	ITT New York, N.Y.	Comptroller	Allied Power Industries
Robert Stowbridge	Manager Plans & Programs	Computer Sciences Div. Computer Sciences Corp.	Commercial Management	Illinois Bell Telephone
Shirley Ann Fay	Vice President	Computer Procedures Corp. Mineola, N.Y.	Editor	National Security Agency
George Grayson	Assistant to the Director	Honeywell EDP Div. Wellesley Hills, Mass.	Project Director	Metropolitan Life Insurance Co.
John W. Chislett	Sales Manager	Conrac Div. Conrac Corp.	Assistant to the Director	Solar Div. International Harvester
R.L. Lane	Product Line Manager	Digital Equipment Corp. Maynard, Mass.	Marketing Manager	Digital Equipment Corp. Maynard, Mass.
Norman L. Boudreau	Director Management Services Division	Continental Computer Associates Philadelphia, Pa.	Vice President	Continental Bank & Trust Co.

Mohawk Data Sciences to Build Research Center

HERKIMER, N.Y. – Mohawk Data Sciences Corp. will construct a major facility in the Boston area. The facility, to be known as the MDS – Research and Development Center, will also have manufacturing responsibilities.

Three top level management changes followed formation of the center. Robert T. Pearson was named a vice president and director of the center, Eugene C. Gilbert was named special assistant to the president, and James C. Neely was named general manager of Anelex Corp., a wholly owned subsidiary.

Pearson formerly was vice president of Anelex and manager of Anelex engineering operations. Gilbert was general manager of Anelex. He continues as Anelex vice president. Neely will also continue as Anelex vice president of manufacturing.

Expansions

Honeywell Moves Division

MINNEAPOLIS, Minn. – Honeywell will expand its computer related Special Products Division by moving from the Boston area to a Honeywell plant in San Diego.

The Special Products unit, part of Honeywell's EDP Division, manufactures mass data storage disk packs and Keytape units at plants in Newton and Lawrence, Mass.

The company plans to begin construction July 1 of a 50,000 square foot addition to the existing 65,000 square foot plant in San Diego.

Employment at the San Diego plant, now a manufacturing facility for the Test Instruments Division of Honeywell, will more than double from the present 280 to about 600 within a year.

Test Instruments will move its San Diego activities to its Denver, Colo. headquarters.

New Plant Under Way

CULVER CITY, Calif. – Data Products Corp., manufacturer of computer peripheral equipment, has broken ground for a new facility in the San Fernando Valley.

To be located on the Warner Ranch in Woodland Hills, the building will occupy a 21 acre site, and is scheduled for occupancy in November. The building and site will provide the company with sufficient space to continue its planned growth into the 1970s.

ETC Moves

CLEVELAND – The Electronic Tabulating Co. has moved to new and larger headquarters at 2905 Chester Ave. where it has completed installation of more than $500,000 worth of additional data processing equipment.

The new equipment includes an IBM 360 system which will provide the company with the increased capabilities of third generation computers.

ETC serves industrial, commercial, and institutional clients in the north-eastern Ohio area. It specializes in providing complete data processing services to school systems, including maintenance of administrative and student records such as grade cards and attendance records.

COMPUTER SYSTEMS FOR SALE

7080 160K system available for delivery Oct. 1968.
7074 10K system with 7 729 VI tape drives available Nov. 1, 1968.
7070 10K – immediate delivery at fraction of original cost.
1410 40K, 5 729 V's, 1402, 1403 II available for lease July, 1968.
1401 12K, 1402, 1403 II, 4 729 V's for Oct. 1968 delivery. 1403 has upper and lower case printing.
H-200 20K system with 900-lpm HSP, 4 44KC tapes available Nov. 1, 1968.
1440 16K, 3 1311's, 1442, 1443 system available immediately. Includes 1448 Transmission Control. Excellent for bank.

Detailed specifications and prices supplied without obligation. Free Equipment Bulletin and brochure on IPS' services on request.

IPS
INFORMATION PROCESSING SYSTEMS, INC.
200 WEST 57TH STREET NEW YORK N.Y. 10019 (212) CIRCLE 6-2267

TRS to Handle Sales of Rivoli Theatre Seats

New York's Rivoli Theatre has signed a contract with Ticket Reservation Systems for the sale of its 1522 seats. The TRS system, which links electronic box offices in department stores, banks, supermarkets, TWA, and American Express offices to a central computer, enables a ticket buyer to purchase seats, at box

CONTRACTS

office prices, on a first come, first served basis. The tickets are printed out and the locations are automatically removed from the computer inventory. The first terminal to operate is selling tickets in Grand Central station for Yankee home games. With the completion of additional installations in the Manhattan suburban area, Los Angeles, and Chicago, it will be possible, for example, for a Los Angeles resident to purchase a ticket for a New York or Chicago event.

Agreement has been reached between National Cash Register and Ultronic Systems Corp. covering NCR's marketing of datasets made by Ultronic for use with on-line NCR computer systems. The units will be offered by NCR for either rental or purchase to on-line users of the Century Series and 315 computers. The datasets will be made to NCR specifications and will be known as the 753 unit.

The Advanced Products Division of the Link Group, General Precision Systems, Inc. has received a $400,000 contract from the Air Force to develop a new photoelectric recording analyzer. The primary function of this computer controlled film analyzer will be automatically to extract selected data recorded on 35mm rolled film and aperture cards through the use of a high precision flying spot scanner.

NCR 315 to Handle Bank's Accounting

The First National Bank of Hobbs, New Mexico, has ordered an NCR 315 computer which will become the control center for savings, demand deposit, and installment accounting. The region's major commercial activities are oil, farming, ranching, and potash production.

Orders and Installations

A computer-controlled optical system that may bring oil fields once thought dead back to life has been installed at Mobil Oil's Geophysical Services Center in Dallas, by Information International of Los Angeles. The system is a general-purpose optical scanner called the Programmable Film Reader (PFR). It is reading, digitizing, and transferring information from the more promising of Mobil's 400,000 well logs to magnetic tape for data processing. Previously the logs were assembled, reduced, and interpreted by hand.

Illinois Institute of Technology Research Lab, Chicago, has installed a Digital/Video Disc Memory Model FPD-16, from Display Division, Data Disc, Inc., Palo Alto, Calif. The unit will provide buffer storage for a display system to be used in the Electro-Magnetic Capability Analysis Center of the United States Department of Defense.

El Paso County Commission, Colorado Springs, Colo., has ordered a Univac 9300 system to assist authorities in general accounting, tax assessments, and billing. Stratton Warren Hardware, Inc., Memphis, wholesale firm, has ordered a Univac 9300 and a Univac 9400 which will collect data from remote locations, update general inventory, and provide schedules for replenishment of goods. M-& S Computer Service, Inc., Justice, Ill., a service bureau, has ordered a 9400 system to take over functions now being performed by a 9300 system, including payroll processing, general accounting, billing, and school reports.

SBA Honors Comress Founders

WASHINGTON, D.C. – Don J. Herman and Fred C. Ihrer, co-founders of Comress, whose $2000 investment six years ago has grown into a thriving computer service firm with more than 100 employees, have been named small businessmen of the year in the Washington metropolitan area by the Small Business Administration.

In announcing the award, SBA Regional Director Richard A. Salem said the two were selected because they exemplify the imagination, initiative, independence, and integrity by which American small businessmen make vital contributions to the nation, the economy, and the free enterprise system.

COMPUTERWORLD

education

calendar

June 14, Washington, D.C. – "Documentation Standards." Contact: Brandon Systems Institute, 1611 North Kent St., Arlington, Va.

June 17-19, Dallas, Texas – "Computer Operations Management and Control." Contact: Brandon Systems Institute, 1611 North Kent St., Arlington, Va.

June 17-21, Princeton, N.J. – "Analog Simulation and Computation." Contact: Director, Education and Training, Dept. 10-17, Electronic Associates, Inc., P.O. Box 482, Princeton, N.J.

July 8-12, Los Angeles – "Computer Evaluation and Selection." Contact: R.F. McIntosh, Computer Learning, 6201 Leesburg Pike, Falls Church, Va.

July 15-19, Los Angeles – "Time Sharing." Contact: Mr. R.F. McIntosh, Computer Learning, 6201 Leesburg Pike, Falls Church, Va.

Computers in Education AMA Conference Topic

NEW YORK – The annual American Management Association conference, which will spotlight the use of computers in the education field, is being moved to the New York Hilton Hotel this year. Exhibition space is being increased by 50% to accommodate the more than 100 companies which will be exhibiting Aug. 13-15.

The conference, and the exposition, are directed to two basic groups. One group, consisting of school and college administrators, includes school superintendents, their assistants, principals and assistant principals, business managers, college presidents, deans, department heads, audio-visual directors, and board members.

The other group consists of executives in manufacturing, finance, retail business, transportation, communication, utilities, military and government. These officials are concerned with teaching new skills to raw trainees, with retraining skilled workers in increasingly complex jobs, and developing executives at every level.

Like many other aspects of industry, training is concerned with increasing efficiency through the new technology and cutting training costs.

Exhibits will include computers, computer programs, computer assisted instruction, tapes and disks, testing materials, programmed courses, textbooks, programming services, demonstration materials, training services, and consulting services.

Conference Topics

The conference will consider three major aspects of education and training. These are "The Realities of Education and Training," "Rights, Revolution and Remedy–The Three Rs Today," "Training and Development for Specific Needs," "New Trends in Education and Training," and "The Individual and Education and Training."

Last year, educators and industrial executives involved in training came to the show and conference from 43 states, Canada, and 15 other countries.

The American Management Association points out that the exposition brings together the best in education hardware, software, and services, all in one place, all at one time. Evaluation is easier because direct product comparisons are possible.

Conference registration may be made by writing the American Management Association, 135 West 50th St., New York, N.Y. 10020.

Who said a computer shouldn't get promoted from within?

All day long you manage a computer installation, and what happens? Management thinks the computer's a genius and you're its assistant.

This situation could go on indefinitely unless you do something a computer couldn't possibly do. Like promote a better deal on computers to your management.

For example, you can buy "used" computers for as little as 25% of new cost, perhaps saving your company hundreds of thousands of dollars.

Machines are available with known technical ability that have huge, easily accessible libraries of programs. And with hundreds of people already trained in their operation and programming.

And not only that, every "used" machine is continuously maintained by the manufacturer and we guarantee the continuance of the service agreement when you buy it.

Certainly, there are jobs that require the unique capabilities of Third Generation equipment. We can even help there. But, if you're to get everything out of these new machines that they have to offer, using a low-cost Second Generation satellite system represents an important economy-for example, excess printing load and/or periodic management reports.

If what you need is more capacity and/or capability for your present Second Generation system, there's no more efficient way to get it than through The Computer Exchange.

Even those contemplating their first computer should examine this new alternative.

Talk to us, and the only problem you'll have is how to spend the extra money you'll be saving to build your department.

What about surplus equipment? That's no problem either. Because The Computer Exchange operates like any other exchange, commodity or stock. If it has value, we'll buy it.

So if you'd like to know what you should buy or what you should sell, or what the right market price is for equipment, or how to lower cost and increase performance, or what's available, or anything and everything about "used" computers, you can't find a better informed group of computer people who talk your language.

Give us a call. Or stop in. Or let us stop by to see you. We'll help you promote a computer and outsmart it at the same time.

THE COMPUTER EXCHANGE INC.
30 East 42nd St., New York, N.Y. 10017
(212) 661-5870

User Training Programmers For Customers

SACRAMENTO, Calif. – There is a worldwide need for people who can tell numerically controlled machine tools what to do and how to do it. The help wanted signs are becoming more common as increasing numbers of the numerically controlled machines are introduced in industry.

At Aerojet-General Corporation's Sacramento facility, the firm's Computing Sciences Department has taken steps to alleviate the shortage of trained manufacturing personnel. The department offers several courses and seminars in automatically programmed tools (APT) to employees of government agencies and industrial firms.

Small Classes

In the training sessions, conducted by a qualified staff headed by G.E. Jerahov, small groups receive instructional materials, learn the techniques of APT programming, and actually apply the knowledge they acquire by programming semi-sophisticated production parts.

The courses usually cover two weeks with a time lapse of seven days or more between the first and second weeks to give students time to digest what they have learned before putting it to practice.

The complete line of numerical control manufacturing services offered by the Computing Sciences Department at Sacramento includes consulting, training, computer programming, and machine tool control tape preparation.

Old Problem Leads to New Business

WOODSTOCK, Vt. – Tall, thin, quick speaking Harry Lamont Ames II, 28, came back to the scene of his Dartmouth college days a little over a year ago and tried to find a place to live. He eventually found one, but only after an effort that he considered much too long, expensive, and tiring.

There must be an easier way to find a house, he told himself one day after an unsuccessful search. And he figured out one involving the use of computers and microfilm.

Ames tried unsuccessfully to give the plan to the state so he could pursue his real goal of going to law school. He has been accepted at several, but hasn't found time to attend since he started New England Real Estate Clearing House.

A native of Cortland, N.Y., Ames decided on the Hanover area after the Navy to escape what he calls "creeping suburbia." The house he finally located is in North Pomfret, Vt., about 10 miles away from his office in Woodstock, which is another few miles to Hanover, N.H., where Time Share, Inc., is located.

No Central Listings

It was to Time Share that Ames took his task. He was concerned that there was no single source for up-to-date, comprehensive, accurate listings of all the properties for sale in a given area.

He found literally hundreds of real estate agents to deal with, none of whom could afford to advertise all of his listings in detail.

In fact, Ames discovered that less than one property in 100 was ever advertised at all, anywhere.

The clearing house receives listings from all real estate brokers and keeps thousands of property descriptions on file in a computer and on microfilm.

Buyers also send applications to the clearing house, describing their needs. The computer matches the listings against what the buyer wants in a few seconds, and selected listings are sent to the buyer. He then contacts the agent or broker with the property or properties that interest him. This is a point which may have taken days or even weeks to get to under the old trial and error method.

What Ames did was eliminate those false starts that occur when searching for property in an unfamiliar area.

Weeds Out Sightseers

While a help to the buyer, the service is also a boon to the broker, who, through the clearing house, has weeded out those sightseers and joyriders who love to tour the New England countryside at the expense of real estate agents, but who have no real intention of making a purchase.

This is accomplished through the use of the unique fee system invented by Ames. He charges the brokers $1 per month per listing for his service. The buyer pays a fee of from $5 to $10 to receive up to 15 listings which have been matched for him by the computer. The fee paid by the buyer is insurance for the broker against the "client" who is looking only for a ride in the country. The fee paid by the buyer is less than the cost of a tank of gasoline, which in many instances can be used up in a single day of unsuccessful househunting.

Neither Ames nor any of his employees receives fees or commissions based on sales. This is one reason for the clearing house's success.

Application From Arabia

The clearing house has received applications from a woman in Saudi Arabia who is looking for a house along the seacoast of Maine. "She's there, making use of a machine in New Hampshire to save herself endless correspondence and delay. That's what I call progress," Ames said. The success of his venture has drawn franchise inquiries from as far away as South America.

Ames is also proud of the fact that he can conduct modern data processing business without disrupting the charm of a traditional New England village. This holds out great hope that progress need not destroy all that has gone before he said.

At first Ames planned to restrict his efforts to the listings of 50 Vermont brokers. But his enterprise grew to the point where he has had to refuse that many brokers in Vermont alone, to prevent unnecessary duplication of listings.

The word spread to New Hampshire, and then to Maine. And, because Ames was utilizing only a part of his available computer time, he began listing for brokers from these states as well.

The future for the service appears unlimited to Ames. Information can be accumulated which will constitute a "living picture of any given real estate market at any time, or over any period of time. Just think of what that means for everyone who has a vital interest in market information, such as banks, and other mortgaging institutions, investors, insurance companies, the government," he said.

Computer Runs Carborator Tests

ROCHESTER, N.Y. – The Rochester Products Division (RPD) of General Motors Corp. has begun operation of a sophisticated carburetor testing system believed to be the only completely computer controlled testing system of its kind.

Developed to meet the exacting federal requirements for automotive exhaust emission and to greatly improve carburetor reliability, the system tests and adjusts 20,000 units a day.

Because of the highly complicated electronic surveillance and control exercised by the GE-PAC 4060 computer system, tests and adjustments are obtained which could be produced otherwise only under laboratory conditions, according to Philip B. Zeigler, RPD general manager.

The $8 million facility now tests every carburetor produced at the plant. A total of 97 test stands are utilized.

The entire testing facility is housed in a specially constructed 420 by 50 foot chamber, held at constant barometric pressure and climate controlled to assure uniformity of operation.

Once an operator has placed a carburetor on one of the test stands, the computer system takes complete control. It triggers a series of from nine to 13 complicated and exacting tests for the accuracy of metering both air and fuel flow through the unit. The test stand checks accuracy of metering throughout full range of operation, from idle to full throttle. Actual flow ranges from a slow drip to a fast stream of solid fuel jetting through the carburetor.

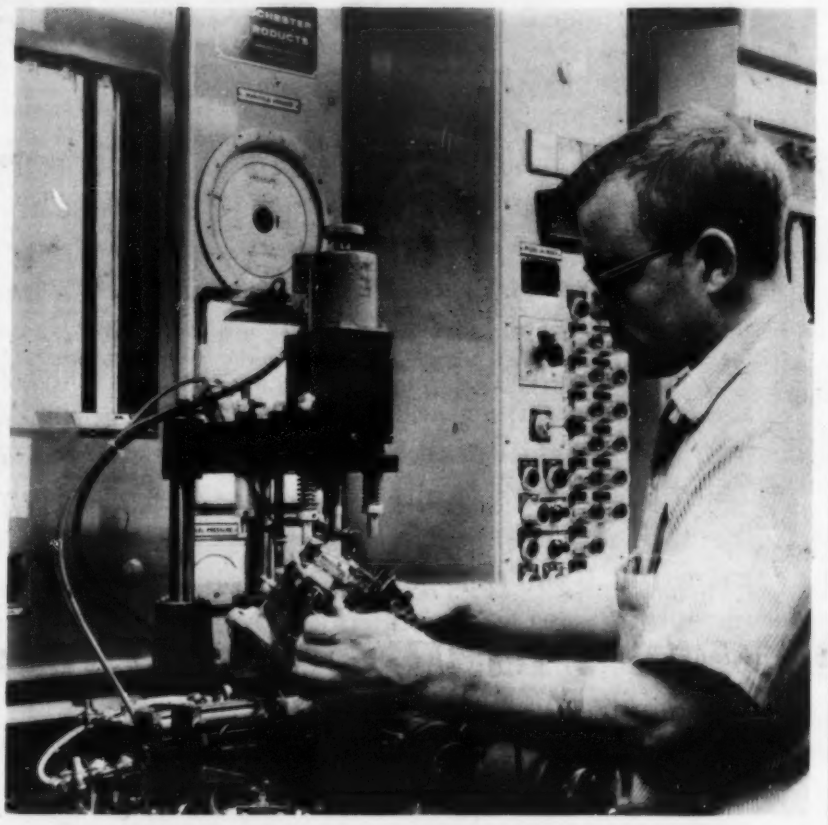
If the fuel or air flow is incorrectly adjusted, the computer directs the test stand mechanism to adjust metering screws for correct performance. Should a malfunction appear which cannot be corrected in the test stand, the computer flashes a code number and a warning light on the display panel. At the same time it types out a report on four strategically located typewriters. The computer also locks the carburetor on the stand until the operator signals he has noted the computer's report of its malfunction. On signal, the computer releases the carburetor so the operator can tag it and place it back on the production line for repair.

In case a pattern of malfunctions shows up, the typewriter display system alerts key engineers and production supervisors who immediately check the production line to correct any improper procedures. The typewriters are located in the production, inspection, and manufacturing development laboratories, as well as in the test area.

With former hand testing methods, several hours elapsed before any pattern of malfunctions could be picked up for production line adjustments.

GM carburetors tested include 120 different versions of four basic models. The models include a monojet system and single jet for six cylinder engines as well as two-jet and quadra-jets for eight cylinder engines.

The computer system makes it possible to shift tests from one carburetor type to another in less than one minute. The changeover is made simply by inserting additional punched cards in the computer system. A few adjustments simultaneously are made on the test stand involved on the testing room floor.



Inspector Darwin Groves, above, places a carburetor on one of the test stands controlled by computer. Some 20,000 carburetors are tested daily at the 97 test stands, below, each carburetor undergoing from nine to 13 tests.

Operators, in 1885, handled each telephone call completely manually at the Illinois Bell Telephone Co.

Today terminals connected to a computer give operators access to information on millions of telephone numbers.

New System Accesses Data on Nonworking Telephone Numbers

CHICAGO – Chicago telephone operators with computers at their fingertips have drastically reduced the hunting and fussing associated with looking for people whose telephones have been disconnected.

Special "intercept operators" come on the line if you've dialed a nonworking number in the Chicago area. In seconds, they can get the needed information from two Univac 418 computers.

The computers, installed in the Chicago headquarters of the Illinois Bell Telephone Co., tell the operators whether the person being called has a new number, when the original phone was disconnected, and the reason for the disconnect.

"Let's say you call your cousin in Chicago," a Bell official said. "He's moved, and the intercept operator cuts in. Using a keyboard, she gives the number to the computer. A few seconds later, the information you need appears on a display screen in front of her."

Each computer holds a record of about one million nonworking numbers, including the disconnect data, and over two million working numbers. The computers back up each other.

The phone company has found that about one out of five people who reach the intercept operator has simply made a mistake in dialing. In this case, the operator can find out from the computer whether the number which the person meant to call is working.

Illinois Bell has grown in less than 50 years from 560,000 to nearly 5,500,000 telephone installations. About 115 new telephones are installed every hour. Its intercept service is growing about 5% a year.

Before installing the computer system, the company printed updated directories each day.

Over 600 computers are already being used within the Bell System throughout the country.

Future uses of computers are under study. Among the early advances seen are the following:

- Computers will give operators immediate time and charges on long distance calls.
- Telephone directories will be compiled and printed by computer. The listings for entire cities would be stored in the computer memories and would be updated each day.
- Computer systems will hold records of each customer account, eliminating tons of paperwork.

British Newspapers Planning Automated Plant

LONDON – A computer project is being implemented at Portsmouth and Sunderland Newspapers Ltd., Portsmouth, for the production of seven weekly newspapers and one daily evening newspaper.

The aim is to produce the evening paper and all the weekly provincial papers – which cover an area stretching almost from Bournemouth to Guildford – from a central publishing center at Hilsea on the outskirts of Portsmouth.

An International Computers and Tabulators Ltd. ICT 1901 computer, delivered last October, is already working on the production of the first newspaper, the West Sussex Gazette. The other newspapers will be progressively phased in throughout 1968. The Evening News, which is scheduled for December, will be the final newspaper to go over to computer composition.

Type Setting

The news copy is punched in an unjustified form into punched paper tape by keyboard operators. The tapes are read into the computer, where the material is automatically justified and hyphenated in the correct format. A computer printout of each piece of copy is produced on the computer's line printer. This consists of paired lines of information, the lower line containing the actual copy and certain non-print information such as measure, type size, body size, heading, and indents, while the upper line consists of symbols denoting upper case, type face, etc.

When this printout has been edited, the keyboard operator is presented with a series of notations representing the corrections required and their position in the text. From this a new punched tape is prepared containing details of the corrections. This is read into the computer and the corrections inserted into the appropriate story already held on magnetic tape.

Each complete story is then punched out onto paper tape – fully justified, hyphenated and edited – and used to drive a special phototype setting machine. This machine, the Linotron 505, is the first of its type in the world. It produces bromide prints for each piece of copy ready for pasting up the pages of the newspaper. The completed pages are used for web-offset printing.

Advertising Automated

The computer composition system also is being used for feature articles – held on magnetic tape ready for instant use – and for classified advertisements. All copy for classified advertisements is input to the computer on punched tape, unjustified, and in a random sequence for any publication. The ads are sorted into date of publication, alphabetical order within classification, justified, and hyphenated. A file containing all the advertisements which are repeated or to be used in future issues is held on magnetic tape, and automatically inserted at the appropriate time. As a by-product of advertisement processing, invoices are to be prepared and files maintained on advertisers' accounts.

Other work to be undertaken in the future will include newsagents' accounting, circulation statistics, purchase ledger, payroll and various analyses. Being considered for introduction later is an electronic system for automatically counting the newspapers as they are dispatched. The system would be controlled by punched paper tape produced from data held in the computer regarding newsagents' accounts.

The computer programs have been tailored by Portsmouth and Sunderland Newspapers' own staff in collaboration with ICT to suit the publications which will be produced at Hilsea.

System Reads 32 Medical Sensors

HOUSTON, Texas – A system designed to gather and process physiological data for a wide variety of medical applications has been developed by Texas Instruments Inc. Called TI-MED, it offers an economical solution to many problems involving the handling of electrophysiological data.

Included among its uses are the gathering and processing of data from up to 32 sensors simultaneously for intensive care units; remote cardiac diagnosis stations; rapid data reduction for near-real-time data presentation during cardiac catheterization; data reduction and presentation for EEG, phono-cardiographs, dye sensitive and pressure tests; and most other medical procedures generating large volumes of data which must be correlated, reduced, processed and/or presented in some special form, such as a chart record or oscilloscope presentation.

Computer Controlled

The system is built around a small digital computer, the Model 980, originally developed by Texas Instruments to control complex semiconductor testing systems. Other elements of the system include amplifiers for the gathering of physiological data, input multiplexers, analog-to-digital and digital-to-analog converters, magnetic tape and drum memories, and a variety of peripheral equipment, as required for the application. Since the system is modular, adaptability to a variety of functions, as well as economical enlargement of basic systems, is practical.

The system has the capability for simultaneous treatment of as many as 32 channels of physiological data at once. Since most electrophysiological data, up to now, has been gathered one channel at a time (for band-width or economic reasons), the older techniques sacrifice the inherent time synchronization of the different signals, and reduce the precision of correlation analysis. In addition, single-channel systems present problems in noise removal. When averaging is used to remove noise, the technique has a tendency to remove or smear minor signal characteristics which often have significant bearing on the data. The new system provides the ability to apply adaptive filtering to optimally eliminate various artifacts from the patient data, including 60 Hz background.

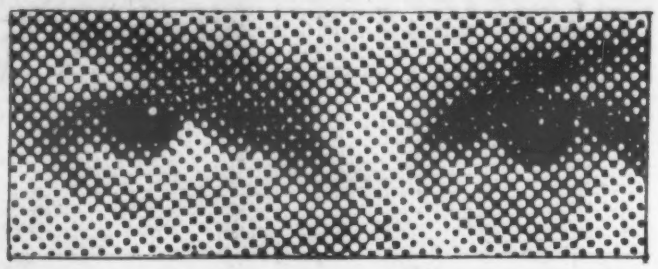
Simultaneous Readings

In the past, differential diagnosis of cardiac problems in the presence of arrhythmias has been difficult because of sequential, rather than simultaneous, data gathering techniques employed. Since there is generally no precise mathematical connection between ectopic beats which occur during one cardiac cycle and those which occur several seconds later, while another ECG lead is being taken, time coordination is very difficult. The TI system eliminates this problem by recording all leads simultaneously and presenting the information to the physician for his interpolation.

One of the initial installations will be at the John Sealy Hospital at the University of Texas Medical School, Galveston. The system will be used to monitor patients in a coronary intensive care unit for the occurrence of arrhythmias.

Because of the vast array of medical applications to which this new system can be directed, prices will vary with the equipment required and the complexity of the programming needed. The basic computer is priced at $20,000.

For more information contact the Industrial Products Division, Texas Instruments Inc., P.O. Box 66027, Houston, Texas 77006.



NOTICE TO ADVERTISERS

COMPUTERWORLD COVERS DPMA IN 2 JUNE ISSUES.

(DPMA show dates June 25th thru June 28th) Washington, D.C.

DPMA PREVIEW ISSUE.

Advertising Closing Date June 14 . . . 5 p.m. Mailed Wednesday before the Show.

Plus 3000 bonus circulation to the Show attendees the first 2 days.

DPMA SHOW ISSUE.

written on the scene about what's happening . . . comes out the 26th (mid-show)

3000 bonus circulation to show attendees 26th, 27th, 28th.

Both issues go to Computerworld's 20,000-plus paid subscription list.

Two opportunities to tell your story in the immediate news atmosphere.

DPMA Preview Issue . . . Closes June 14th
DPMA Show Issue . . . Closes June 21st

Call us (617) 332-5606
Ask for Neal Wilder
or contact any Computerworld advertising office.

Galler Beats Canning For ACM Presidency

(continued from page 1)

dards; and Dr. Robert W. Rector, Informatics. Neither of the nominated by petition candidates, Donald Davidson or George Heller, obtained a seat.

One regional representative who was not nominated by the ACM Nominating Committee did win in his area, the new Mountain Region. John L. Tischauser, of Sandia Corp., New Mexico, beat out both of the originally nominated candidates, Gary Carlson and John K. Sterrett.

The result of the election surprised many people. But this was unavoidable as in general the membership had no indication as to how the election was proceeding. Groups of members seemed to think that the people in their immediate acquaintance were representative of the over-all membership. Canning, however, had always said that he was the underdog in the race; and seems to have been the best election prophet.

Here are the winners of the ACM elections:

PRESIDENT
Bernard A. Galler, University of Michigan, Ann Arbor, Michigan.

VICE PRESIDENT
Walter Carlson, IBM, Armonk, N.Y.

SECRETARY
Donn B. Parker, Control Data Corp., Palo Alto, Calif.

MEMBERS AT LARGE
Bruce Gilchrist, IBM, White Plains, N.Y.
Herbert R.J. Grosch, National Bureau of Standards, Washington, D.C.
Robert W. Rector, Informatics, Inc., Sherman Oaks, Calif.

REGIONAL REPRESENTATIVES
Allegheny
A.B. Tonik, Univac, Philadelphia, Pa.
Capital
Carl Hammer, Univac, Washington, D.C.
East Central
Lewis Ondis, Westinghouse Bettis Plant, West Miffin, Pa.
Greater New York
Samuel M. Matsa, IBM, New York, N.Y.
Mountain
John L. Tischauser, Sandia Corp., N.M.
North Central
Charles H. Davidson, University of Wisconsin, Madison, Wis.
Northeast
Anthony Ralston, State University of New York at Buffalo, Amherst, N.Y.
Northwest
Murray Berg, Standard Oil Co. of California, Oakland, Calif.
South Central
E.H. Brock, Manned Spacecraft Center, NASA, Houston, Texas
Southeast
Leland Williams, Auburn University, Auburn, Ala.

$5 Walk-In Fee Is Set for FJCC

NEW YORK – Beginning with the Fall Joint Computer Conference, the walk-in fee will be raised from $1 to $5 and there will be no more one-day registrations.

The American Federation of Information Processing Societies (AFIPS), sponsor of the spring and fall joint computer conferences, said the walk-in fee was being increased as a crowd control measure. It said the one-day registrations had not "proven to be a workable situation."

The spring conference, held in Atlantic City, N.J., last month, attracted 17,652 persons, AFIPS reported.

★ BUY ★ SELL ★ SWAP ★

FOR SALE
One IBM 1442, Model 2, Reader-Punch in new condition.
Price: $10,000
Reply to Box No. 2302, Computerworld.

IBM 1410, IBM 7070 SYSTEMS
For Sale, For Lease
Fantastic Savings
All Configurations
Call now: George S. McLaughlin Associates, Inc.
785 Springfield Avenue
Summit, New Jersey 07901
201-273-5464

AGO Keypunching Service, Inc.
Large or Small Volume
Recurring and 1 time assignments
REASONABLE RATES
Service Accurate & Dependable
Open 7 days, 24 hrs. per day
Grace Ormond
(212) 658-4328

FOR SALE
IBM – PARTS – USED
402-403 – SAVE 60%
Guaranteed–Reconditioned–Parts
Datronic Service Corp.
5210 Wesley Terrace
Chicago, Ill.
992-0760

DISK
360/20 (2) 2311 Disks
Prime Time Available for testing or usage
Programming Support Available
Los Angeles
(213) 747-7970

IBM 007 at $1300, 082 at $1500, 402/523 at $3700, 403 at $3500, 602 at $2000, 089 at $2900, 407 at $950. Panels 50% off.
105 Hinricher
Willow Springs, Ill. 60480
(312) 839-5164

FOR SALE
IBM 1401 System, Model E05 12K Many Features; 1402, Early Card Read; 1403; 1406; (2) 7330's Available June 1968. Under IBM Service Contract. Call M. Schiff
(212) 875-5000

SELL computer time. Data Processing Services. Used equipment. Keypunching services. Programming Services. Leasing services. Consulting services . . . AND YOUR COMPUTER PROGRAMS . . . by advertising in the

COMPUTERWORLD BUY/SELL/SWAP

Send us your ad copy, including NAME, ADDRESS, & ZIP CODE NUMBER
$.50 per word; minimum cost per classified ad is $14 (28 words)
PAYMENT SHOULD ACCOMPANY ORDER; $1 EXTRA FOR BILLING
( ) Insert next Issue(s) ( ) Assign Box Number for $1 extra

Name:_____ Title:_____
Send bill to:_____
Address:_____
City:_____ State:_____ Zip:_____

RETURN TO: COMPUTERWORLD, 60 Austin St., Newton, Mass. 02160

For Sale
Panels and Wires (Gold Contacts) For UNIVAC 1004.
Call (412) 281-5100
Extension 2487,
or write to Box 2301.

TOP PRICES PAID FOR IBM KEY-PUNCH EQUIPMENT
SELL NOW–DELIVER LATER
DATRONIC RENTAL CORP.
5210 Wesley Terrace, Chicago, Ill. 60656
A/C 312 992-0760

TWO – IBM 729 MODEL 2 TAPES
$16,000 each
ONE – IBM 729 Model 5 TAPE
$18,000 each
Available immediately, IBM Maint. Contract:
George S. McLaughlin Associates, Inc.
785 Springfield Avenue
Summit, New Jersey 0790
201-273-5464

Tymshare Now Offers Super Basic

PALO ALTO, Calif. – An English style of dialog is now being used by time sharing subscribers to Tymshare's service centers, in place of the purely numeric operations that were previously in use. The change is possible because of a new compiler (Super Basic which is upward compatible with Basic) which has been installed at the centers and which can handle alphanumeric strings in much the same way as PL/1.

"We thought it would make it easier for the programmer to have this facility, so we put it in," T.J. O'Rourke, president of Tymshare, told COMPUTERWORLD. "It may have made the compiler a little slower – I don't know really – but blinding speed is not what time sharing users are looking for. They want ease of use. And that is what we think we've given them in Super Basic."

In addition to the use of alphanumeric strings, the new compiler allows a user to handle up to three files as part of his program. These files are normally held on disks while not in use, and brought forward to faster drums while they are being referenced by a program. Charges for the files are based on the maximum file area used during the month, an approximate $1 per month per 1000 characters. Editing facilities have been added by allowing a user to provide a picture of the report form he wants to use, and then simply to provide the variable to be inserted under the standard headings and subheadings.

An improvement in the maximum length of allowable programs from about 300 statements to some 900 statements is apparently being made use of. One of the center's analysts, Tal Manual, said that he thought the reason was that the increased facilities were letting people use larger programs.

SOFTWARE FOR SALE

COBOL CROSSREF

Single program produces a cross reference by page/line, or compiler sequence, of all file, data, and procedure names contained in a COBOL source deck. Designed for S/360 DOS 32K and up. Send for full details.
Price: Upon request.

Contact: Kenneth G. Taylor
P.O. Box 831
Denville, N.J. 07834

Autocoder to 360 DOS-BAL

Program converts 1401 Autocoder source statements into IBM 360 DOS-BAL source statements. It is about 97% effective on typical 1401 tape programs.
Implemented for 360 with 32K or larger. Written in DOS-BAL.
Price: Upon Request
Contact: Karl A. Fugal
1536 East 1220 North
Logan, Utah 84321

360 Payroll System – 100% COBOL –

Series of 23 programs which process hourly and salaried payrolls in a multi-company environment. Liberal deduction capabilities. Full labor distribution reporting. Complete file maintenance facilities. Excellent documentation. Runs on IBM 360 with 32K and two 2311 Disk Drives. This system is now being used and has proven highly successful. Price: $5,000

Contact: Business Information Systems, Inc.
Times-Chronicle Building
Jenkintown, Penna. 19046

BTAM USERS!

Simulator program called BTAM Simulator allows user to De-Bug System/360 Teleprocessing applications without actual terminal hardware and to by-pass communications with existing terminals – while checking out new applications. Developed by Programming Sciences Corporation/Int'l. Paper Company, Graphics Division, 90 Park Avenue, New York, N.Y. 10016.

Price: $900

Contact: Lee Rydell
(212) 661-5540

GENERAL LEDGER

Special designed for service organizations. Systems today is being used by banks and service bureaus. Allows for easy audit, because of its scheduled checkpoints.

IBM 360 32K and Honeywell 200 16K COBOL
Contact: Systems Associates, Inc.
356 Penn Street
Reading, Pennsylvania 19602

PAYROLL SYSTEM

Series of programs which compute payroll on a modular basis. Handles multi-companies. Produces – checks – journal – distribution – deduction register – earnings record – 941A – W2. Will handle most payrolls. Runs on IBM 360 – Mod 30 – 32K Disk – BAL – Price: $3000.00

Contact – Thomas Tierney
American Computer Leasing
1 East Fourth Street
Cincinnati, Ohio
(513) 621-6585

Computerized Flowcharter

Produces ASA standard flowcharts on 8½" x 11" area of line printer page for convenient documentation. Neat, easy to read, easy to follow. Flowcharts assembly language, Fortran, or Cobol source decks for any computer. The flowcharter program itself runs on the CDC 160A or 8090 computer; would be glad to rewrite it to run on your computer. Samples free upon request.

PRICE $500:
Write to: K. Folkenflik
480 Grove Street
Rahway, New Jersey 07065

CPA Computer Processing for Accountants

Parameterized, report-generator type system for General Ledger write-up and statement preparation. High profit application for banks and service bureaus.

COBOL System

Currently running on H200 & 360/30. Will convert for any system.

$7500 purchase (lease & franchise available)

Contact Mr. Floyd Stem
Computer Resources Corporation
Wilton, Conn.

NUMERICAL CONTROL LANGUAGE AUTOSPOT III

will handle 90% of all computerized N/C machine tool part-programming. The language is point to point with two axis contouring capabilities. In addition, many features of 360/30 AUTOSPOT/ADAPT are included, i.e., complex pattern operations, free format, etc. Runs on IBM 1130 8K version.

Price: $200/month or
$6000/10 year lease

Contact: Mr. Neale Koenig
Information Control Systems
327 South 4th Avenue
Ann Arbor, Michigan 48108
(313) 761-1600

Do you have a program for sale?

Then sell it in Software For Sale

List your program for 13, 26, or 52 weeks at these low rates.
1" only $10.00 per week
2" only $20.00 per week
3" only $25.00 per week
4" only $30.00 per week
Send COMPUTERWORLD your listing . . . we'll send you the customers.

Service Estimates Time Needed for Programming

DALLAS, Texas – A manpower requirement estimating service for programming which costs $27.50 per program and gives you the number of man months (or weeks or days) of a competent, experienced programmer that will be required has been started by Mathematical Engineering Associates Inc. (MEA).

Moreover, if you have more than one program involved, and if you want to pay another $10 per program, MEA will supply a timetable scheduling the development activity.

Tape formats and configuration charts constitute the normal starting point. Source listings of old programs to be converted are a second starting point.

Naturally, the more information given, the better the magnitude estimate will be. However, based on nine years as independent consultants, MEA frequently receives inquiries documented in every manner "from a hunch to a decision table."

The estimates are obtained by using the MEA estimating handbook with its "Progrestimator." This chart reflects work on computer developments since 1959. The chart was constructed after work on GE, PDP, Honeywell, CDC, IBM, and other computers in a variety of industrial environments.

Balanced Schedule

When more than one program is involved, and MEA optionally provides the scheduling of the development activity, the client must also advise MEA of the numerical limitations of his staff and his elapsed time.

This schedule takes the form of individual graphic charts balancing benchmarks, elapsed time, and budget together. These charts form the basis of progress reports direct to management during the development. Real management control is achieved by this route.

"We eliminate the phase of development known as '90 per cent complete,'" Robert L. McIntire, MEA president, said.

Central File Is Keyed to Applications

READING, Pa. – Using a central file which keys to all of a banks applications, rather than keying the applications to a rigidly patterned central file, is a technique which has apparently worked out well for Systems Associates, Inc. (SAI) because it allowed the firm to demonstrate what it believes was a data processing first – demonstrating the system on-line before any manufacturer was able to do so, at least using his own software.

The qualification is necessary because at the recent National Banking Automation Conference in Florida IBM was actually showing the same application, tied into the same bank, and using the same software right next door to the SAI booth. However, the IBM demonstration was showing the use of the hardware, rather than the application.

At the conference the consulting firm was tied in, live, to the central file of the American Bank & Trust Co. in Reading, Pa., which is using the Centralized Information File (CIF) system, using an IBM display unit. Users were able to check out balances, search for the account numbers of people they knew by name, and find out many background details of the people, in much the same way that a bank officer might want to in the normal course of work.

The system itself is written in 360 Assembly Language, and Cobol, but the organizing of the central file to the applications has made it immaterial, according to SAI, what language is used for the various other applications which are currently running. This has meant that current applications can be tied into the file without reprogramming.

The heart of CIF is the name search routine. This search program, as well as all other routines needed, can be contained in 20K of core. One bank which has the system installed has on-line commercial loan, personal trust, plus all other "11" basic services of the bank contained in its application file, all keyed through the central file. These various applications are only using 30K positions of foreground program.

For Making Bids

Program Figures Project Costs

PASADENA, Calif. – A Fortran-based program which allows profit-or-loss estimates to be made during a bidding process has been announced by Economatics. The program, based on the wargaming techniques developed since World War II, is currently being explained using highway construction bidding as its basis, and the user manual cites this as its example. However, Dr. Philippe Clavier, president of Economatics, says that it is in fact suitable for other areas.

The technique operates through a computer program called IBID (improved bidding in depth). Written in Fortran, the proprietary program can be used on most third generation computers. The Fortran deck is designed so that all basic parameters can be easily changed.

The system will predict profits and losses on bids and also calculates the probability of a contractor losing a bid to a competitor.

In addition to the usual considerations – material, labor hours, equipment – IBID also takes into account the environmental factors, if necessary. In the case of the highway construction area these could include weather, soil, and saline corrosion.

The system is immediately available, and includes training plus a users manual, as well as the Fortran deck.

System Designed to Ease Documentation Problems

PHILADELPHIA, Pa. – A software package for handling documentation needs of data processing installations is being offered to users of 32K 360s for $6000 by Atlantic Software Inc.

The system, called Doc-U-Ment, handles file maintenance problems, and retrieving and displaying them in flowchart form as well as in text or card image form.

A shorthand form of input to the system is allowed, and various forms of documentation formats can be handled including procedures, system charts, files, program specifications flow charts, object decks, and source decks.

COMPUTERWORLD

financial

Western Union Board Approves CSC Merger

NEW YORK – Western Union Telegraph Co. directors approved on June 3 a plan to merge with Computer Sciences Corp. The action came a week earlier than expected.

Russell W. McFall, Western Union of El Segundo, Calif. chairman and president, had presented the directors with details of the proposals May 28 and then recessed the meeting to allow them "sufficient time to study the merger before bringing the matter to a vote."

CSC directors approved the merger proposal May 27.

The plan, involving an exchange of $362 million in common shares, is still subject to the approval of shareholders of both companies, regulatory agencies, and a ruling by the Internal Revenue Service. Dates for special shareholders meetings have not yet been set.

Wall Street's View

SR Close Over 55 Good Sign

NEW YORK – Bache & Co. has made the following recommendations and notations regarding three computer stocks:

SANDERS ASSOCIATES – Positions should be maintained for a move to 57 which would indicate further upside progress to the low 60 resistance area. (The stock closed at 56-3/8.)

SCIENTIFIC DATA SYSTEMS – SDS recently broke through a short term resistance level and in so doing completed a short term flag pattern. Traders can add to positions for an initial move to the 160-165 zone, with further gains likely over the longer term. Significant support lies in the 140-145 area. (The stock closed at 158-1/2.)

SPERRY RAND – SR is currently consolidating. During this period a move below 50 would be negative, while a move above 55 would be a positive sign. However, at current levels, positions should be maintained. (The stock closed at 56-1/2.)

Mead to Pay $5M For Data Corp.

DAYTON – Mead Corp., a major paper products company, announced it will exercise its previously disclosed option to acquire Data Corp., a company doing advanced work in data storage, computer services and other activities connected with information handling and analysis.

The transaction will involve 125,000 Mead common shares, valued at approximately $5 million. Data Corp., a privately held company, had sales last year of about $5.3 million, Mead said.

Photon Directors Vote Four-for-one Split; Meeting Called for July 24

WILMINGTON, Mass. – The directors of Photon, Inc., which manufactures computerized photographic typesetting equipment, have voted a 4-for-1 stock split. The stock has recently been selling at about $115.

The record and payable dates won't be determined until after a special stockholders' meeting called for July 24 to vote on an increase in common shares necessitated by the split.

There are currently two million Photon shares authorized and 875,000 are outstanding.

New Registrations

CONSOLIDATED ANALYSIS CENTERS INC., 225 Santa Monica Blvd., Santa Monica, Calif., a company engaged in systems analysis and software development, filed a statement to register some 115,000 common, 15,000 of which are to be offered by selling stockholders. Proceeds from the offering (with the price to be set by amendment, maximum $6) will be used for debt repayment, equipment acquisition, and working capital. The underwriters are Cantor, Fitzgerald & Co., Beverly Hills, Calif., and William Norton & Co., New York.

INFORMATION & COMMUNICATION APPLICATIONS, INC., 134 Congressional Lane, Rockville, Md., a company engaged in systems analysis and software development, filed a statement to register some 225,000 common. Proceeds from the offering (with the price to be set by amendment, maximum $4) will furnish working capital and be used for other corporate purposes. The underwriter is First Investment Planning Co., Washington, D.C.

Datronic Rental Corp. Sues Two Finance Companies

CHICAGO – Datronic Rental Corp., a computer leasing company, has charged in a $9 million damage suit filed here, that two finance companies conspired to "interfere and destroy" Datronic's "essential credit and financing arrangements" and to "obtain and examine confidential information."

Named in the suit were James Talcott, Inc., New York, and Commercial Discount Corp., a Chicago-based subsidiary of Canteen Corp.

Datronic claims that under the pretense of gathering information needed to grant Datronic a loan, the two companies made a complete investigation of Datronic's corporate records and obtained in the process such confidential information as "customer files, business practices, pricing considerations, contract forms, new business proposals and methods, and operation procedures."

Talcott announced earlier this month that it had formed a computer leasing division, which would "concentrate primarily on general purpose computers, data communications terminals, and related equipment."

Aubrey McPherson, president of Commercial Discount, denied that his firm had any plans to enter the computer leasing field although it had once "looked into the feasibility" of such a move.

Commercial Discount was also accused in the suit of lending Datronic money under terms that would restrict the company's ability to arrange other financing. According to the suit, Commercial Discount suggested that Datronic "consider making inquiry about possible merger negotiations" with Canteen Corp. McPherson denied this charge.

C-A, Collins, Wallace Earnings Down

Earnings Reports

NEW YORK – Computer Applications has reported an 18% decline in net earnings for the six months ended March 31, 1968. Earnings fell from $248,432 ($.21 per share) in the 1967 period to $204,646 ($.16 per share) in the latest six month period. Revenues increased 18%, from $16,743,073 during the first half of fiscal 1967 to $18,877,762 during the first half of fiscal 1968.

First half earnings for the company were by no means indicative of earnings expected for the full current fiscal year, according to John DeVries, chairman and president.

Earnings for 1967 have been adjusted to reflect a pooling of interests related to the acquisition of the William Penn Publishing Co. Earnings for the 1968 period include those of Home Testing Institute TvQ, Inc. acquired in December 1967.

DALLAS – Collins Radio has reported a slight decline in earnings for the nine months ended May 3, and has attributed the decline to a provision made for the anticipated 10% tax surcharge and to a strike at the company's Cedar Rapids, Iowa plant last October.

Earnings fell from $8,937,000 in the 1967 period to $8,900,000 in the latest nine months. Revenues increased from $322,274,000 to $322,931,000.

Earnings during the latest quarter increased 10% on falling revenues. Net income rose from $3,064,000 to $3,351,000 while sales fell from $116,093,000 to $110,154,000.

The company also noted it expects earnings and sales for fiscal 1969 may be reduced by a recent decline in government contracts.

CLEVELAND – Addressograph-Multigraph Corp. has reported a 47% gain in net income on a 10% gain in revenues for the third quarter ended April 30, 1968.

Net income rose from $4,751,000 ($.57 per share) in 1967 to $6,977,000 ($.87 per share) in 1968. Worldwide sales increased from $93,122,000 to $102,584,000.

Nine month results show only a slight increase in net income, from $13,965,000 to $14,093,000. Revenues for the same period increased 5%, from $264,991,000 to $277,924,000.

Keydata Gets $500,000 Boost

WATERTOWN, Mass. – Keydata Corp., a subsidiary of Keydata and Adams Associates Inc., has received $500,000 from private institutional investors to finance an expansion of the on-line business data processing service it currently operates in the Northeast.

John T. Gilmore, Jr., president of Keydata, revealed that the subsidiary now has about a hundred subscriber terminals in the field and that about 10 to 20 terminals are being added each month. By 1971 Gilmore expects Keydata will be servicing over 800 terminals which will be linked by telephone line to the company's new offices here.

Control Data Acquires Card Firm

MINNEAPOLIS – William C. Norris, chairman and president of Control Data Corp., and Edgar Snider, president of Electronic Accounting Card Corp. (EACC), announce that Control Data has acquired EACC.

The transaction involved the exchange of 37,781 shares of Control Data common stock for all the outstanding common of EACC. Norris said that EACC, located in Highpoint, N.C., will operate as a wholly owned subsidiary of CDC. EACC is a manufacturer of punched cards for use in data processing equipment.

One of the nation's leading computer leasing companies dealing with third generation equipment of all makes and both short term and long term leases.

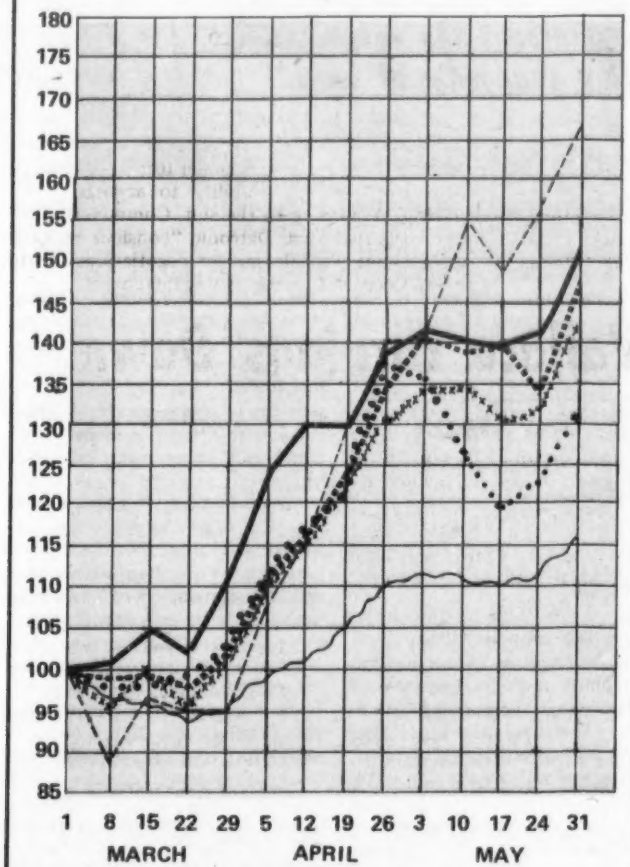
Contact National for a free evaluation of your requirements and a money-saving leasing proposal.

National Computer Rental, Ltd.

A subsidiary of National Equipment Rental, Ltd.
Contact Fred R. Schmid, Executive Vice President.
(212) 425-7900, 26 Broadway, New York, N.Y.

Computer Stocks Trading Index

Computer Systems
Peripherals & Subsystems
Supplies & Accessories
Software & EDP Services
Leasing Companies
CW Composite Index



Big Gains Made By B-W, BAS, CN, MAI, SEL

(continued from page 1)

through the Congress. The movement may also be the first sign of an expected summer rally.

Systems Engineering Labs continued to lead the advances made by stocks of computer manufacturers. SEL jumped 15% to 36-1/2 after gaining 13% in the previous week. Scientific Controls, another volatile issue, rose 12% to 65 after jumping 40% two weeks ago. Both Control Data and IBM moved ahead 8%. Trading of IBM involved the new 2-for-1 split shares. NCR set a new 1968 high after gaining 6% to 145. Collins Radio suffered the largest loss in the sector on news that nine month earnings had decreased. The stock dropped 6% to 69.

Electronic Memories gained 11% last week to lead the gainers in the Peripherals & Subsystems Sector. Ampex, Photon, and Tally each gained 10% while Sanders moved up 8% and Alphanumeric and Bunker-Ramo 7%. Addressograph-Multigraph rose 6% to 85 after setting a new 1968 high of 87-3/8.

Barry-Wright (B-W) jumped 18% to 42-1/2 to lead the Supplies and Accessories Sector after gaining 10% in the previous week. The company's Wright Line Division is active in selling disk packs. Wabash Magnetics gained 13% to 20 and Adams-Millis added 9% to close at 28. Memorex and Moore Business Forms, both down 1%, were the only losers in the sector.

The Software and EDP Services featured several large gainers. Computer Network (CN) led the list with a 30% gain to 56. The stock had lost 26% in the previous week. Brandon Applied Systems (BAS) had another good week and gained 25% to a new high of 24-3/4. Aries rose 16% to 21-1/2 after remaining even in the previous week. Advanced Computer Techniques, one of several stocks listed this week for the first time, rose 12% to 22-1/2. University Computing added 10% to 118-1/2 after cancelling its tender offer for Western Union shares. Applied Data Research was the only significant loser in the sector, declining 9% to 24-1/2.

Management Assistance (MAI) jumped 22% after closing even with the March 1 base only a week ago. Other large gainers in the Leasing Sector included Randolph Computer, up 12%; Cyber-Tronics, up 11%; and Levin-Townsend, up 8%. Datronic Rental, which recently filed a $9 million suit against two insurance companies, dropped 5% to 11.

COMPUTER STOCKS: TRADING SUMMARY

Week ending May 31, 1968

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	163 3/8	220–157	202 1/4	• Burroughs	+ 3	+ 1.50	+ 23.79
NYSE	67 3/4	101– 65	69	Collins Radio	– 4 5/8	– 6.28	+ 1.84
NYSE	101 1/2	160– 95	157	• Control Data	+ 12 3/4	+ 8.83	+ 54.67
AMSE	102	160– 95	140 3/8	• Digital Equipment	+ 6 3/8	+ 4.76	+ 37.62
NYSE	87 1/4	100– 84	88 1/8	General Electric	– 1/8	– 0.15	+ 1.00
NYSE	60	95– 59	83	Hewlett-Packard	– 1 1/4	– 1.48	+ 38.33
NYSE	93 1/8	136– 89	125 1/2	• Honeywell	– 1	– 0.79	+ 34.76
NYSE	286 1/2	357–280	387	• IBM	+ 27 1/2	+ 8.34	+ 23.74
NYSE	103 7/8	148– 99	146	• Nat. Cash Register	+ 9	+ 6.62	+ 39.69
NYSE	48 7/8	58– 45	50	Raytheon	– 1/4	– 0.50	+ 0.87
NYSE	78 1/4	106– 73	104 3/8	RCA	+ 5 1/2	+ 4.50	+ 33.39
OTC	22 1/2	65– 20	65	• Scientific Controls Corp.	+ 7	+12.07	+188.89
NYSE	118 1/8	172–108	158 1/2	• Scientific Data	+ 8	+ 5.31	+ 34.17
NYSE	45	63– 42	56 1/2	• Sperry Rand	+ 3 1/8	+ 5.85	+ 25.56
OTC	22 1/2	36– 20	36 1/2	• Systems Engineering Labs.	+ 4 3/4	+14.96	+ 62.22

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	59 3/8	87– 52	85	Addressograph-Multigraph	+ 3 3/8	+ 5.97	+ 45.61
OTC	21	66– 45	66 1/2	Alphanumeric	+ 4 1/2	+ 7.26	+216.67
NYSE	29	37– 26	32 7/8	Ampex	+ 2 7/8	+ 9.58	+ 13.36
OTC	17 1/4	27– 16	22 1/2	Bolt Beranek & Newman, Inc.	+ 1 1/4	+ 5.88	+ 30.43
AMSE	13 1/2	19– 12	16	Bunker-Ramo	+ 1	+ 6.67	+ 18.51
AMSE	32 1/8	47– 27	43	• Calcomp	+ 1 3/4	+ 4.24	+ 33.85
OTC	**	**	15 3/4	Computer Equipment	– –	– –	**
OTC	16 1/4	22– 13	20	• Data Products	+ 1 1/8	+ 5.96	+ 31.15
OTC	19 1/4	27– 16	21 3/4	• Digitronics	– 1 1/4	– 5.44	+ 12.99
OTC	39	67– 33	51	• Electronic Memories	+ 5	+10.87	+ 30.77
OTC	10	18– 9	17 1/2	• Fabri-Tek	– 5/8	– 3.45	+ 75.00
OTC	34	59– 28	59	Gerber Scientific	– –	– –	+ 73.53
OTC	12 1/2	20– 10	17 3/4	Information Displays	– 1/8	– 0.70	+ 42.00
AMSE	16 7/8	45– 14	37 3/8	Milgo Electronics	– 4 1/8	– 9.94	+121.48
AMSE	115 1/8	195–108	187	• Mohawk Data Sciences	+ 5 1/4	+ 2.89	+ 62.43
OTC	74	136– 71	120	• Optical Scanning Corp.	+ 2	+ 1.69	+ 62.16
OTC	72	125– 64	125	Photon	+ 11 1/2	+10.13	+ 73.61
AMSE	25 5/8	36– 20	32	• Potter Instrument	+ 3/4	+ 2.40	+ 24.87
OTC	40 1/4	92– 38	90	• Recognition Equipment Corp.	+ 2	+ 2.27	+123.60
AMSE	16	29– 14	24 3/8	Rixon Electronics	– 1 3/4	– 6.70	+ 52.34
NYSE	46 1/8	66– 42	56 3/8	Sanders	+ 4	+ 7.63	+ 22.22
OTC	40 1/2	51– 36	50 1/2	• Tally Corp.	+ 4 1/2	+ 9.78	+ 24.69
NYSE	242 1/4	304–229	302 1/2	Xerox	+ 15 3/4	+ 5.49	+ 24.87

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	48 1/2	64– 41	59	• Acme Visible	+ 3	+ 5.36	+ 21.05
NYSE	20 1/2	32– 19	28	Adams-Millis	+ 2 1/4	+ 8.73	+ 36.56
OTC	13 5/8	17– 13	15	• Baltimore Business Forms	+ 1/4	+ 1.69	+ 10.09
AMSE	27	42– 21	42 1/2	• Barry Wright	+ 6 1/2	+18.05	+ 57.41
OTC	**	**	34 1/4	Data Documents	**	**	**
OTC	27 1/4	33– 26	33	• Ennis Business Forms	+ 1/2	+ 1.54	+ 21.10
NYSE	64 1/8	112– 61	111 5/8	• 3M Company	+ 3 7/8	+ 3.60	+ 32.68
OTC	56	74– 49	71	• Memorex	– 1	– 1.39	+ 22.41
OTC	27 1/4	32– 26	30 1/2	• Moore Business Forms	– 1/4	– 0.82	+ 11.92
NYSE	57 1/4	71– 47	70	Nashua Corp.	—	—	+ 22.27
OTC	31 1/4	37– 30	37 1/2	Reynolds & Reynolds	—	—	+ 20.00
OTC	34 1/2	35– 25	28	• Standard Register	+ 1/2	+ 1.81	– 18.95
NYSE	37 3/4	44– 32	33	• Uarco	+ 3/4	+ 2.32	– 12.58
AMSE	14 1/4	22– 13	20	Wabash Magnetics	+ 2 1/4	+12.68	+ 40.35
OTC	25 3/4	36– 24	30	• Wallace Business Forms	+ 1	+ 3.45	+ 16.50

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	22– 7	22 1/2	• Advanced Computer Techniques	+ 2 1/2	+ 12.50	+200.00
OTC	17	27– 14	24 1/2	• Applied Data Research	– 2 1/2	– 9.26	+ 44.12
OTC	15 1/2	24– 15	21 1/2	Aries	+ 3	+ 16.22	+ 38.71
AMSE	47	66– 42	56	Automatic Data Processing	+ 2 1/4	+ 4.03	+ 23.40
OTC	9	24– 6	24 3/4	• Brandon Applied Systems	+ 5	+ 25.32	+175.00
AMSE	22 7/8	43– 21	27 1/2	Computer Applications	+ 3/4	+ 2.80	+ 20.22
OTC	**	**	11	Computer Environments	**	**	**
OTC	30	60– 24	56	Computer Network	+13	+ 30.23	+ 86.67
AMSE	40	63– 32	60 1/8	• Computer Sciences	+ 1/2	+ 0.84	+ 50.31
OTC	39	62– 35	37 3/4	• Computer Usage	+ 2 1/4	+ 6.34	– 3.21
AMSE	36 1/2	58– 36	54 3/4	• Computing and Software	– 1	– 1.79	+ 50.00
OTC	12 1/2	20– 9	16 1/4	• Digitek	—	—	+ 30.00
AMSE	39 3/8	62– 28	40 1/8	Electronic Computer Prog. Inst.	– 1	– 2.44	+ 4.98
OTC	35	62– 22	62	• Informatics	+ 4	+ 6.90	+ 77.14
OTC	**	**	22	Matrix Corp.	**	**	**
OTC	11 1/2	27– 8	25	• National Computer Analysts	+ 2	+ 8.69	+117.39
AMSE	31	43– 28	40 1/8	Planning Research	+ 3/8	+ 0.94	+ 29.43
OTC	**	155– 53	125	Scan-Data	—	—	**
OTC	9	15– 8	11 3/4	Software Systems	+ 1/2	+ 4.44	+ 30.55
OTC	20 1/2	22– 13	13 1/2	TBS Computing Centers, Inc.	– 1/2	– 3.57	– 34.15
OTC	63	118– 57	118 1/2	• University Computing	+10 1/2	+ 9.72	+ 88.09

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	**	53– 19	53	Boothe Computer	**	**	**
OTC	19 1/4	25– 18	25 1/2	• Chandler Leasing	—	—	+ 32.47
OTC	**	**	6 5/8	• Computer Exchange	**	**	**
AMSE	25 1/8	35– 21	33 1/2	• Computer Leasing	+ 2 3/8	+ 7.63	+ 35.33
OTC	12 1/4	18– 11	16 1/2	Cyber-Tronics	+ 1 1/2	+11.84	+ 18.37
AMSE	106 5/8	164– 94	128 3/8	Data Proc. Financial & General	+ 6 5/8	+ 5.44	+ 20.40
OTC	12 1/2	17– 11	11	Datronic Rental	– 5/8	– 5.38	– 12.00
OTC	20	35– 18	34	Dearborn Computer	+ 2	+ 6.05	+ 70.00
OTC	13 1/4	17– 12	17 5/8	• DPA, Inc.	+ 3/8	+ 2.17	+ 33.01
AMSE	28 3/4	43– 27	38 3/8	• GC Computer Corp.	+ 1 3/8	+ 3.71	+ 33.48
AMSE	98	171– 90	166	• Leasco	+ 3	+ 1.82	+ 71.42
OTC	**	14– 10	11 3/4	Lectro Computer Leasing	– 1/4	– 2.08	**
AMSE	45 7/8	94– 41	79 1/2	• Levin-Townsend Computer Corp.	+ 6 1/4	+ 8.53	+ 73.33
OTC	10 1/2	18– 7	8 3/4	• LMC Data, Inc.	—	—	– 16.67
OTC	10 7/8	15– 10	13 1/4	• Management Assistance	+ 2 3/8	+21.84	+ 21.84
AMSE	41 5/8	53– 25	44 1/8	National Equip. Rental	+ 2 5/8	+ 6.32	+ 6.01
AMSE	38	64– 36	56 1/2	• Randolph Computer Corp.	+ 6 3/8	+12.23	+ 53.96
OTC	**	**	40	System Capital Corp.	**	**	**
AMSE	10 7/8	18– 10	16 7/8	U.S. Leasing	– 3/4	– 4.26	+ 55.17

* Stock split **Not available *Companies included in Computerworld's stock trading index for each sector.

Systems Analysts Urged to Take Creative Risks

"...It is doubtful that anyone has gained from the jobhopping tendencies of the systems profession."

"...You must accept the responsibility for promoting your point of view."

The following is a condensed version of a speech, "Creative Risk Means Systems Success," made by Robert P. Henderson, vice president-marketing, Honeywell EDP Division, to a recent systems symposium.

Our industry is an adolescent. It should be exploding with variety, bursting with ideas, vibrant with efforts to try the untried, and yet there is little evidence of such vitality – except in the sheer statistics of the industry's growth pattern. The symptoms of institutionalized thinking are there for all of us to see. They include drab repetition of the previously workable approach, reliance on hackneyed solutions, and a facelessness in systems design, programming, and analytical problem-solving. Those symptoms are more typical of a declining industry than of a booming one.

The lack of theory, and the lack of fresh thinking in the systems profession, are unacceptable at this juncture.

The solutions to both of those problems is in part creativity and it is in part risk-taking. I would like to discuss the subject of creative risk-taking – a process which involves the effort to innovate and the courage to implement new approaches, to take steps that are challenging, but steps that are also necessary if real progress is to be attained. Nearly every accomplishment man has made has been as the result of thinking in original channels and having the courage to fight for those thoughts. When such thought and action patterns are most original, we call it genius. When they are conventional and predictable, we call it banality. The computer industry needs more original thought and your profession is most qualified to provide it.

There are many factors that have led to the dilemma we now face.

The underlying one has been the explosive growth of the information industry itself. This growth has been characterized by the fact that the total amount of the world's information has doubled since World War II. Correspondingly, the demand for organizing that information has increased more than tenfold in the same period. These phenomena have been accompanied by rapid technological change in which we have seen three generations of hardware, as many generations of software, and an ever continuing redefinition of systems objectives.

As a result, there have been too few people with too little experience attempting to accomplish too many tasks in too new an environment. Something had to give – and it was the theoretical and the experimental that it appears to me were the first to go.

We all recognize that as being the case. The problem now is to change the situation by establishing new priorities for yourself, your profession, and the organizations you serve. These priorities can be set and the objectives of theory and experiment can be met. They can be met by creativity and by risk-taking applied to your business. Within the framework of being creative and taking risks, I would like to propose a four point program. I hope the program will be helpful to you in evolving towards higher standards for the systems business.

First, is the need for developing professional breadth.

Now we all know that the Systems and Procedures Association and other groups in and on the periphery of the systems profession are very helpful in developing or improving one's professionalism. I know, too, that most of you keep current with systems thinking by continuing education, reading periodicals, attending seminars, and other forms of knowledge seeking. These are all excellent practices but the dimensions that must be added include better involvement and better managerial skills.

By better involvement I mean that systems people must not be concerned with only the activities of their immediate department or project. By its very definition, as well as by the strength of current trends, the term "systems" means thoughtful involvement of many disparate parts into a unified whole. Thus, the systems man must concern himself with broad relationships that affect many, if not most, of an organization's operation. Involvement is the one way in which systems people who have often been charged with "ivory tower" approaches to problems can fully appreciate an organization's bread and butter needs.

By developing better managerial skills, systems people will also be better able to face the intense pressures that are likely to continue to be put on them. In recent years, a rapid increase in the numbers of data processing installations has escalated the need for people. Demand sets quantity, not quality, as the standard for hiring and promoting. We have all seen the consequence of this situation: the fretful manager, the concerned supervisor, and the harassed systems man shirt sleeves rolled up, working late into the night to solve a crisis situation. In place of the creative idea, the foresighted planning, and the stimulation of new challenge came the defensive posture, the constant overwork, and the perpetual lack of time to do things well.

The lesson to be learned from this frustration is this: orderly and effective implementation of business systems requires management skill. Systems people cannot rely on others to provide that skill. Rather they must develop it for themselves. Having managerial skill not only complements your professionalism, it also insures that creative programs you develop can be managed through successful implementation.

That is why involvement and managerial development are extremely important to your professional growth.

The second point in the program is the development of organization knowledge.

This means striving to become truly expert not only in the structure of the organization in which you are involved, but also its needs, its problems, and its organizational style. It also means developing a commitment to the organization and its objectives. And it also means working to identify with the organization and its goals. Implicit in those objectives is loyalty to the organization.

Recent studies of the motivational forces among professional people, such as systems people, indicate two basic orientations. One group we might call organizationalists. The other let's call functionalists. The organizationalist, it was found, is a person who does identify with the organization and its objectives. He is likely to give primary allegiance to the organization, and remain with it. The functionalist, on the other hand, gives his primary loyalty to his profession or his specialty. His tendency would be to leave an organization in pursuit of a more challenging opportunity within his area of functional skill.

One of the characteristics of the systems profession in recent years seems to have been its high density of functionalists! The personnel shortages have led in our

(Continued on Page 15)

NEED PEOPLE?
(and who doesn't these days?)

UNTIL THE TURNOVER PROBLEM IS SOLVED *COMPUTERWORLD* WILL BE THE MOST EFFECTIVE RECRUITING MEDIUM IN THE COMPUTER FIELD.

The problems of turnover and job hopping in the computer field will probably be with us for some time to come. Openings must be filled, and the work must be done in spite of this problem. COMPUTERWORLD will help you find the men and women best suited for the work that there is to be done.

The Career Pages of COMPUTERWORLD Get Results.

POSITION ANNOUNCEMENTS ADVERTISING RATES

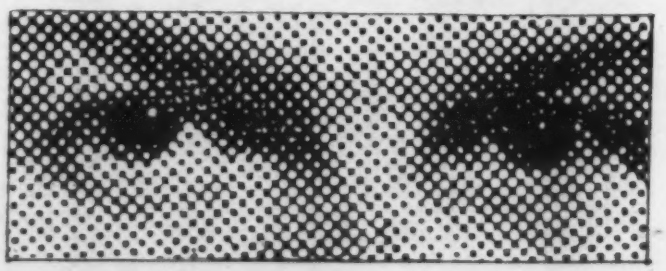
Per single column inch (1 15/16 in. wide)

44 column inches or more	$12.60
22-43 column inches	$13.30
1-21 column inches	$14.00

Copy can be accepted until Friday at 4 p.m. for insertion in following week's issue.

Send copy and instructions to:

Position Announcements Manager
COMPUTERWORLD
60 Austin Street
Newton, Massachusetts 02160



for more information
call Bob Ziegel
(617) 332-5609

Four Point Program Proposed for Systems People

(Continued from Page 14)

industry to a considerable amount of jobhopping. Much of this jobhopping has been for greater professional opportunity. A great amount of it has been for higher salaries. And a great amount of it has been to escape distasteful work assignments. The result, in many cases, has been to breed a large number of systems analysts with a total of four or five or eight years experience at four or five different organizations. Ideally, such a diverse background should result in a very experienced and capable systems person. More likely, it results in a person having the equivalent of one year's experience four or five times over in four or five different companies.

The point here is that it is doubtful that anyone has gained from the jobhopping tendencies of the systems profession. It takes more than a year, or two years, to develop real "experience" about an organization and its problems. Thus, the organization has not benefited fully from the capabilities that a jobhopping systems man brings to the company for the period he is there. Nor, for reasons I just mentioned, does the systems person himself necessarily gain in professional qualification.

The importance of this second point in our program – organizational knowledge – is extremely important. It takes years of diligent effort to be able to apply systems skills most effectively within an organization. For the benefit of your profession, and the companies you serve, a worthwhile career objective might well include careful selection of the organization you wish to join, and then sticking with it so that the fullness of your "expertise" can be developed.

The third point in our four-point program is one I know a great deal about, and that is the importance of developing salesmanship.

What do I mean by that? Simply this: that if you develop a unique solution to a problem, or if you find a new and creative approach to a task, you must concurrently develop a plan to sell that solution or that approach to your management. I would venture to say that some of the best systems concepts ever developed have never been applied in an operating environment because they were not presented properly. Because they were not sold.

If you are an advocate of a cause or of a position or of a development, you must accept the responsibility for promoting your point of view, for inspiring others with your confidence in it, and for helping those involved in making the decision to gain insight into the value and the ramifications of your position. In other words, you must become salesmen for your viewpoints.

Just last week, we received the result of some research we commissioned on the subject of personnel turnover. The study was an in-depth look at the experience of 117 industrial companies. The single most important reason for termination of EDP personnel, the study found, was frustration on several counts: first, by narrowness of the job; second, by lack of opportunity to do original work; third, because they did not see where their jobs fit into overall company operations or objectives.

I believe a great deal of that frustration, and the turnover rates that resulted from it, could be eliminated if systems personnel developed skills at becoming advocates, or salesmen. It is remarkable how effective getting your point of view accepted can be in eliminating frustration.

The study that we did on EDP turnover factors tends to be confirmed by some recent work done at the Massachusetts Institute of Technology. MIT did a study of young college graduates during their first few years in industry. The researchers at MIT found that the harder the young graduate struggles to put to use what he has learned the more resistance he is likely to receive from his company.

I would like to use as an introduction to the fourth point, a summary of one part of that MIT study.

"The bright young graduate is, of course, eager to prove himself once he is hired; so he may try to oversell his education to his first boss. The superior's response may well be the real key to the graduate's early problems in industry. All too often, the response is negative. The boss makes it clear that he thinks his subordinate's ideas are impractical, egotistical, and not in line with the company's goals. He may thus start the young man off with meaningless tasks.

"The graduate, by now worried that his future may be threatened, strives all the harder to find work which will test his abilities. As he flails about, the boss becomes more convinced than ever that the new man is overambitious and needs setting down. He further restricts the graduate. And now the graduate reaches the conclusion that there is no challenge for him in the company.

"Soon he quits.

"If he doesn't resign from the company, his choices seem to be to resign himself to mediocrity, to become complacent or apathetic, or simply, silently, to stifle his resentment for as long as he can. Either way, the young man's biggest assets – enthusiasm, idealism, creativity, energy – are soon diminished or even quenched."

I found that commentary particularly interesting since so many systems people in our own company – Honeywell EDP – and so many systems people in other organizations are young and just starting their careers.

That leads me to my fourth and final point – which is to have business courage as you go about your work.

For the young man in the MIT study, it takes a great deal of courage to stand up for what he believes in in the face of an indifferent or contemptuous boss. For the systems man trying to change existing patterns and apply creative ideas to old-line situations, it takes courage to hold fast to his opinions in the face of indifference. But when a creative process leads to a conclusion, and that conclusion is based on point one: professional breadth, and on point two: in-depth organizational knowledge, it takes not only point three: good salesmanship, but it also requires a great deal of business courage. Invariably the courageous course is usually the most difficult and most dangerous to pursue. It requires one to accept responsibility. It requires persistence in recommending what you think is right. But as professional personnel, your duty to yourself, your employers and to the profession you represent requires the business courage I am talking about.

In your hands is the greatest technology the world has ever seen. Its potential is enormous. Yet its capacity is untapped. The job of bringing this technology to a pre-eminent position is the task which you face in your profession. Success and progress in leading this technology is not based on any sort of magic or on any sort of luck. Achievement will come to those of you who dedicate yourselves to broadening your professional qualifications . . . to attaining real knowledge of the organizations you serve . . . to learning salesmanship for the products of your creative mind . . . and, finally, to facing up with courage to the risks involved in pursuing excellence.

I think it is true in your profession that "Creative Risk Means Systems Success" – for you, for your profession, and for your employer.

DP INSTRUCTOR

Position available July 1, 360 experience desirable, Bachelors Degree, salary commensurate with experience.

Write

Dean VanTrease or Jim Hill, Dallas County Junior College, Main at Lamar, Dallas, Texas 75202 or call collect RI 2-1411.

AIRLINE SENIOR SYSTEMS ANALYSTS

NORTHEAST AIRLINES is seeking two qualified persons with extensive systems and programming experience. These individuals will be part of the reservations planning department and will be responsible for the development and implementation of new computer oriented methods of operation. The individuals selected will act as liaisons between the reservations department and our corporate data services department. They will work on our IBM PARS systems at the overall system design level. Candidates should have had a minimum of 3 years actual programming and detail system design experience with medium to large scale computers. Applicants must have 2 years airline experience preferably in reservation and/or ticketing. A college degree and the desire to advance into line management are essential.

Send resume in confidence to:
PA/23/03 Computerworld
60 Austin Street
Newton, Mass. 02160

NORTHEAST

An Equal Opportunity Employer

2nd & 3rd SHIFTS IBM 360/30-50

Highly responsible positions are immediately available at large New York City area Manufacturer for:

IBM 360/30 operators with some knowledge of DOS & 1401/60 compatibility. Opportunity to learn TP & real-time applications.

Exprerienced IBM 360/50 operators with knowledge of OS & 7070/74 emulation. Opportunity to learn MVT & real-time applications.

Jr. & Sr. Positions Avail

Salary to
in accordance with experience
Arrange an interview by sending resume, in strict confidence to:
Computerworld Box 2401

An Equal Opportunity Employer, M/F

programmer

If You Have Honeywell 200 or Comparable Exper. and Are Familiar with Cobol and RPG

2 years experience as a programmer will qualify you for a

TOP SALARY

and benefit program including
PROFIT SHARING
YEARLY BONUS PLAN

Send resume in confidence to:
PA/22/02 Computerworld
60 Austin Street
Newton, Mass. 02160

SKIL CORPORATION

Chicago

Systems Programmers

If your interest is in large-scale systems, this advertisement was written for you.

Avco Missile Systems Division has immediate openings in a young and dynamic systems programming section for individuals with software experience. If you have an interest in a large-scale IBM 360 environment including IBM 360/75/65/50/40 with applications in remote data transmission, graphics, time-sharing, systems modification or systems maintenance then here is the opportunity you've been waiting for.

Candidates should possess a minimum of a bachelor's degree. Salaries are fully commensurate with experience, benefits are generous and promotion will be rapid for individuals with ability and ambition.

Direct an outline of your professional experience to Mr. P. C. Dowd, Supervisor of Employment, Dept. N.D.

AVCO MISSILE SYSTEMS DIVISION
201 LOWELL STREET, WILMINGTON, MASSACHUSETTS 01887

AVCO

The aerospace people who have a future for you.

An Equal opportunity employer.

Line Printer and Buffer Added to H200 Series

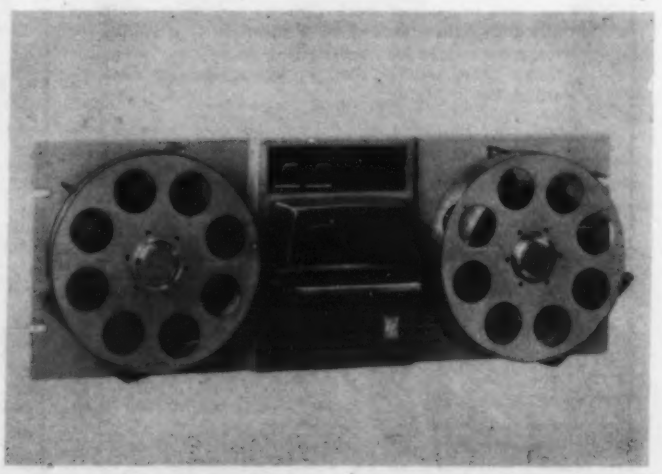
A new high speed line printer and a print buffer have been added to Honeywell's peripheral line. The print buffer permits simultaneous use of a line printer and central processor during more than 99% of the processing cycle. The unit stores a line at a time and releases it according to printer requirements. It can be used with Types 222-3, -4, -5, -6 line printers. Monthly lease prices range from $200 to $225. Purchase price is $9100. Deliveries will begin in November.

The new printer, Type 222-6, prints 1100 lines per minute, or 16% faster than the Type 222-4 which prints 950 lines per minute. It is compatible with other Type 222 printers and can be used on any Series 200 computer except the Model 110. The new printer has a standard 60-character print drum. Vertical spacing can be six or eight lines per inch. Paper can be skipped at speeds up to 50 inches per second with the standard high speed skip feature. The standard 120 print positions per line can be optionally increased to 132 positions per line. Monthly lease prices of the print unit range from $1285 to $1395. Purchase price is $60,975. Delivery will begin in July. Honeywell Electronic Data Processing, 60 Walnut Street, Wellesley Hills, Mass. 02181.

Tab Card Reader

A new static card reader permits "block reading" of full 80 column punched tab cards, 960 discrete outputs, 12 x 80 matrix. Multi-stranded brush type contacts provide dependable closure even if a card is keypunched slightly out of position. The Model 960M can control from 1 to 960 separate output circuits with no external memory required and each contact held closed as long as desired during reading period. The unit has a motorized drive which is push button operated and features a mechanism which swallows the card during read cycles. Price is $1490, with delivery scheduled for this month. Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio 44108.

Hickok Electrical tab card reader



Ferranti-Packard paper tape reader/spooler

New Products

Digital Plotting System

A new digital plotting system operates from punched paper tape. Among the applications of the new PTD are the plotting of engineering variables from time shared computers at a remote terminal and verification of tapes for numerical control machine tools. Special features of the unit include multiple-step programming which allows up to 127 incremental steps in either of two two-dimensional directions from a single output command. This type of programming allows the plotter to be driven from paper tape supplied by a teletype and is good for remote terminal graphics, permitting data to be transmitted in delta format. The system employs either a 12-inch plotter or a more flexible 30-inch plotter. Graphic Systems Division, Computer Industries, Inc., 14761 Califa St., Van Nuys, Calif. 91401.

Microfilm Display

Real time display of microfilm plotter output is provided on a new CRT monitor. The display unit, Model 8350, presents data from CalComp's Model 835 microfilm plotter on an 8 x 10 inch display screen. Plots can be viewed continuously as they are plotted. By pushing a button, any one plot can remain on view for up to 15 minutes. The monitor will also assist in creating animated films on the microfilm plotter. Mounted on a free-standing table, the unit is connected to the Model 835 by cable. Price $8000. Delivery is four months. California Computer Products, Inc., 305 N. Muller St., Anaheim, Calif. 92803.

Treated Cards

Permatrack, a new process which can be applied to both continuous and unit edge-punched cards to provide durability and avoid input errors, has been announced by Visirecord, Inc. Only the feedtrack is treated. There is no added wear on machine parts. Free samples may be obtained by writing Marketing Department, Visirecord, Inc., Copiague, L.I., N.Y. 11726.

Tape Drive

A new plug-for-plug replacement for the IBM 2420 tape drive has been introduced by Midwestern Instruments. The operator panel layout and nomenclature of the Model 4840 will be identical to the 2420. Tape speed replacement transport is listed at 200 ips, with two millisec. start and stop time. Both tape and reels are IBM compatible as is tape format (eight data bits with one parity bit). The unit reads and writes at 1600 bits per inch, phase encoded. Midwestern Instruments, Inc., 6422 E. 41st St., Tulsa, Oklahoma.

Paper Tape Reader

A new tape reader/spooler operates at 300 cps and can store 800 feet of 0.0025 inch paper tape and rewind it at the rate of 40 ips. It can stop on character at 300 cps, with stop/start speeds up to 240 cps, and is capable of handling tapes of up to eight channel width. Designated the Type 4010/4020, the unit is intended to be used for input to digital computers, numerical control of machine tools, automatic testing and checkout equipment, automatic message transmission and industrial process control. It comes in a standard 19 inch rack size and is 7 inches high. Ferranti-Packard Electric, Ltd., Electronics Div., Toronto 15, Ontario, Canada.

Output Typewriter

Full format control of automatic data printout from Wang 370 and 380 Programming Keyboard calculators is now possible with a Wang Model 379-5 output typewriter. The unit, a modified IBM Selectric, will automatically type the contents of the display register by keyboard or program command. Printing rate is 13 cps and all typewriter functions, including carriage returns, line feeds, and tabulations, are automated. The typewriter can be switched on and off directly from the keyboards so that headings, names, and messages can be inserted. Numeric output is fully programmable in columnar format with properly located and aligned decimal points. The typewriter can be used at any time as a conventional typewriter, and tabulated input data and results can be printed out in any desired format. Wang Laboratories, Inc., Tewksbury, Mass.

Charting Template

A new template incorporates all the symbols and nomenclature necessary for flow charting and data processing systems. Standard logic symbols, designated in MIL-STD-806 are also included. The Model T-803 template is heavy transparent plastic, matte finished on one side for glare reduction and press polished on the other. It has 48 openings, and measures 10-1/8 inches by 6 inches. An inch scale in 8ths and 10ths in included along with a card scale. Suggested list price of the Model T-803 is $2.50. The C-Thru Ruler Co., 6 Britton Dr., Bloomfield, Conn. 06002.

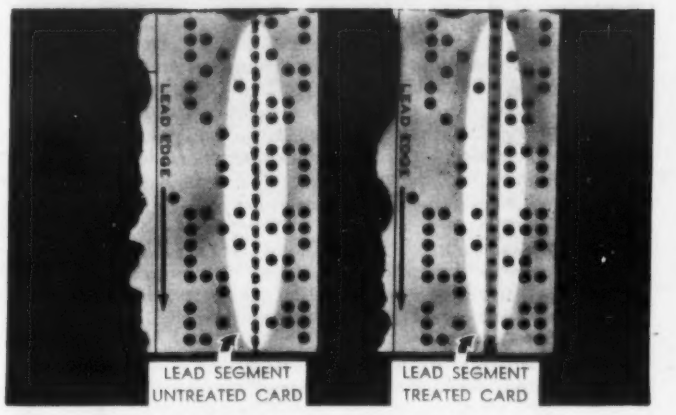
Magnetic Core Memory

A medium speed 3D magnetic core memory with 4096 and 8192 word basic modules available from 4 to 26 bits in 2 bit increments is now in production. Full cycle time of typical 4096 x 8 unit is 1.5 microseconds and will vary up to 40% in larger configurations. Access time is 600 nanoseconds. A full line of options are available and delivery, in small quantities, can be made 30 days after receipt of order. Price of the Model DC-32 starts at $33.50. Datacraft Corporation, 776 N.E. 40th Court, Ft. Lauderdale, Fla. 33307.

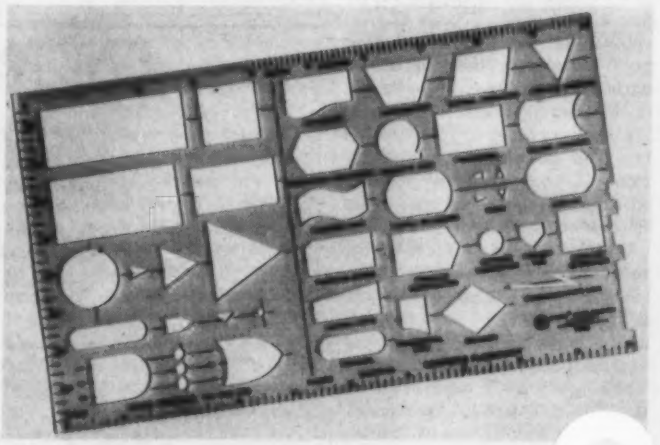
Laminated Tape

A nonabrasive, opaque laminated tape for numerical control, accounting machine, and computer applications has been developed. The tape is called PMPO. Chase Foster Division, Kenne Corp., E. Providence, R.I.

California Computer Products CRT microfilm monitor



Feedtrack of a Permatrack treated card, right, wears better than feedtrack of untreated card, left.



C-Thru Model T-803 charting template